

VOLUME CI

NUMBER FOUR

THE NATIONAL GEOGRAPHIC MAGAZINE

APRIL, 1952

New Zealand, Pocket Wonder World

With Map and 41 Illustrations
30 in Natural Colors

HOWELL WALKER

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With Map and 27 Illustrations MARGARET M. DETWILER
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With Map and 28 Illustrations

MAURICE MOYAL
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Sixty-four Pages of Illustrations in Color

PUBLISHED BY THE
NATIONAL GEOGRAPHIC SOCIETY
WASHINGTON, D. C.

\$6.00 A YEAR

60¢ THE COPY



New Zealand, Pocket Wonder World

BY HOWELL WALKER

With Illustrations from Photographs by the Author

"**Q**UIET," whispered the boatman, "or they'll black out."

Silently our dory drifted on the placid river floor of New Zealand's dark Waitomo Caves. At first we could see nothing in this eerie underworld. Somewhere in the blackness water dripped faintly, tinkling like bits of fragile glass. We could feel and smell the close, cool dampness of invisible walls.

Then suddenly we emerged from a narrow channel into a vaulted grotto. Above us hung a galaxy of tiny lights, nearer, softer, more delicate than any Milky Way. In the pale blue-green glow our faces stared, ghostlike and amazed. The shimmering river reflected the starry loveliness.

Actually we gazed at a synthetic heaven—the magic making of myriad organisms working for a living. Called glowworms, but really the larvae of a fungus gnat, each generated its own light; each added a star to the subterranean firmament (page 448).

A word spoken or a bump against the boat would extinguish the gleaming canopy as if by an electric switch. To the glowworm, puzzling source of cold light, noise implies danger; so it blinks off. None of us broke the hushed spell everyone felt.

This insect (*Bolitophila luminosa*), found only in New Zealand, is much shorter than its name and not so long as a pin. It shines a tail lamp. Clinging to a silken web of its own spinning against the ceiling, the carnivorous creature lets down a dozen or more sticky threads to entangle midges charmed by the glimmer. Vibrations signal feeding time; *Bolitophila* reels in the catch, greedily devouring the victim, line and all.

With this adventure deep in a glowing grotto, I began to feel like Alice in Wonder-

land when she tumbled down the rabbit hole.

Alice wondered whether she'd fall right through the earth and come out among people of the Antipodes. "... I shall have to ask them what the name of the country is, you know," she said to herself. "Please, ... is this New Zealand?"

For me it was indeed New Zealand. Like Alice, I stepped into a miniature universe of natural marvels.

Flightless Birds and Tree-daisies

Here I watched the most unbirdlike of birds, the flightless kiwi (*Apteryx*), rest on its ridiculously long beak when not smelling out worms to eat. This earth-bound, chicken-sized oddity runs swiftly, sees poorly, but hears and scents acutely. It wears what looks more like a grayish-brown jacket of soft fur than feathers. No other bird lays an egg so large in proportion to its body; an average female weighs five pounds, her egg about a pound (page 445).*

I found orchids putting forth their delicate beauty close to ice, and daisies growing on trees. Flowers of the tree-daisy (*Olearia operina*) look like those of the common meadow plant, but wave in giant bunches sometimes as high as 20 feet above the ground.

I saw, too, a living fossil, the sole survivor of a group of long-extinct reptiles. The tuatara reaches a length of two and a half feet. Threatened with extinction by such newcomers as men, cats, and dogs, it has disappeared from the mainland, but survives on off-lying islands (pages 444, 460).†

* For details of another strange inhabitant, the takahē, see "Finding an 'Extinct' New Zealand Bird," by R. V. Francis Smith, NATIONAL GEOGRAPHIC MAGAZINE, March, 1952.

† See "Tuatara," by Frelida Cobb Blanchard, NATIONAL GEOGRAPHIC MAGAZINE, May, 1955.



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Mount Cook, Crown of New Zealand's Alps, Soars 12,349 Snow-clad Feet

Maoris called the peak Aorangi, the Cloud Piercer; British settlers changed its name to honor Capt. James Cook (page 449). Though the Netherlands' Abel Tasman discovered New Zealand in 1642, Cook in 1769 was the first European to set foot ashore, and his explorations put the country on the map (opposite page).

In a lavish exhibition, Nature, everywhere spendthrift in New Zealand, shaped this land of surprise. Snows lie deep on alpine heights; sun bakes subtropical beaches. Between these extremes squeeze glaciers, fiords, and volcanoes, fish-filled lakes, waterfalls and geysers, frigid rivers and boiling mud pots. The sea, never far away, crashes wildly on coasts like Maine's and Florida's.

From Autumn to Spring in 30 Hours

"Last, loneliest, loveliest, exquisite, apart"—Rudyard Kipling's description of Auckland, the largest city, aptly fits the whole country.

For that island Eden on the other side of

the globe I took off from America one autumn morning. Thirty flying hours later I reached my destination in its freshest stage of spring.

In this out-of-the-way corner of the South Pacific, Great Britain a century ago settled her remotest colony. Twelve hundred miles separate it from Australia, the nearest continent.

Home of brown man and white, New Zealand still glistens with the rough-hewn beauty of a diamond. Fewer than two million inhabitants occupy three main islands—North, South, and Stewart. Dominion authority, however, extends over a fleet of islands ranging from just under the Equator to South Polar regions (map, page 423).

Chief port as well as biggest metropolis, Auckland chokes the North Island's narrowest isthmus (page 430). It continues to grow, spilling over, sprawling out wherever it can.

To see the city's expansion, I climbed an extinct volcano in its backyard. In every direction suburban communities mushroom like the industries increasing to supply them.

"We build 1,000 homes a year," said an executive of one construction firm. "But we don't mass-produce identical houses; each varies so a man returning late at night knows his own!"

More than 17 Sheep for Every Person

Although smaller than California, New Zealand has almost every form of scenery, plus some of the world's best farming and grazing land.

This island Dominion lives largely on grass. Permanent pastures cover nearly a third of its total area. Sheep outnumber people by almost 17½ to 1; cattle more than 2½ to 1.

Fifth among the world's flock owners, the country exports more mutton and lamb than any other; it stands third in wool production and second in its export. Local mills absorb only 15 million pounds of the annual clip; more than 300 million pounds, on the average, go far and wide.

Dairying is the nation's top breadwinner. More than three-fifths of the yearly butter production—now twice the tonnage of the largest liner afloat—supplies larders halfway around the world. Cheese enough to load nine or ten Liberty ships annually leaves for overseas markets. Other processed milk shipments are steadily increasing.

In little more than a century of British settlement, the Dominion has become the dairy farm of the Empire and a world source of meat and wool.

White pioneers, however, were not the first farmers here. Centuries earlier, wave-tossed Maoris landed their frail canoes in New Zealand and made it their home (page 460). They cultivated yams and taro, tried to grow coconuts, breadfruit, and bananas.

Tradition tells that these Polynesians brought the seeds on epic voyages from distant Pacific island homes. They used sun and stars, trade winds, currents, and mass bird flights to navigate infinite reaches of empty ocean.

Exactly where the Maoris originated, or when they first migrated to New Zealand, nobody knows. Estimated, but unconfirmed, dates of arrival begin around A. D. 950. Certainly the racial trek continued for centuries. According to the Maoris' own oral history, handed down through generations, their main fleet arrived in 1350.

The Polynesian invasion subdued and virtually exterminated the aboriginal Moriori natives; of them we know almost nothing.

Not until 1642 did white men discover New Zealand; Dutch navigator-explorer Abel Tasman then sighted it, sailing along the western shores. Savage Maoris discouraged his landing there. For the next 127 years only a ragged line loosely charted the "Nieuw Zeeland" on a world map.

In 1769 Capt. James Cook of the British *Endeavour* reached the North Island's east coast. As the first European to stand on its soil, Cook claimed the country for England, and his circumnavigation of the main islands put New Zealand roundly on the map.

In England at first the reaction was, in effect, "No, thanks; we don't want it." But Captain Cook's reports eventually helped to send sealing fleets and whaling ships swarming to these waters. In a few years the sea rovers won hundreds of thousands of valuable skins and countless barrels of oil.

Ruthless exploitation killed the short-lived industries; but sealers and whalers told enthusiastically of Maoriland's possibilities. Adventurers, traders, and missionaries came. Settlement led to discovery of gold; within a single decade, the 1860's, white population jumped from about 75,000 to some 250,000.

As the nuggets dwindled, men settled down to farm. Land disputes with the Maoris grew into bloody wars. Mutual agreement, no victory, eventually brought peace. Settlers resumed their pioneering. Imported sheep increased to feed and clothe a colony that began in earnest to farm for life.

And the Maoris? Since they have been living in harmony with white men, their population has trebled and now exceeds 100,000. They have equal rights and representation in government, make good citizens, superb soldiers, and loyal friends.

Maoris Celebrate 600 Years of History

From Auckland I drove some 70 miles south to Ngāruawāhia, for the town was celebrating the sixcentenary of the main Maori canoe landings in New Zealand.

A heartless rain soaked thousands of Polynesians. Reverently they stood in puddles to hear speeches in their own mellow tongue, watch traditional dances, and listen to songs that reviewed the prowess of their bold seafaring ancestors.

A Maori woman near me expressed her feelings in adopted slang. "Gee!" she whispered. "We're 600 years old!"

Less than a century ago fierce fighting between Maoris and British raged over this Waikato district. Today its rich pastures, peacefully occupied by descendants of the



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No Aircraft Carrier Shows More Wings than Cape Kidnappers in Nesting Time

Gannets have flown here to breed for countless seasons. Multiplying, they have established two more colonies near by. Their breeding season lasts from August to April; this view was taken in October. Seaweed nests hold bluish-gray eggs about the size of a duck's (page 437).

erstwhile enemies, yield a third of the country's dairy output.

Along the Waikato River the Government plans to set up ten hydroelectric stations generating more than a million horsepower. I saw two of these plants already at work, two under construction. For electricity this land of limited coal and almost no oil must, like Switzerland, depend on waterpower.

The whole Dominion is rapidly becoming electrified. I saw only one man milking by hand; machines commonly do the job. The same goes for shearing. A State subsidy carries the current even to remote and lonely farms.

Remember those schoolbook pictures of prehistoric jungle which the weight of ages has

pressed into coal? That's the primeval look of the wilderness I penetrated between Te Kuiti and the Tasman Sea. Only scattered sheep grazing under tall tree ferns, and the lonely road ahead, told of man's intrusion.

Through a deep forest gorge I followed the Awakino River to its mouth, then turned south along the sea-torn coast. As I approached the port of New Plymouth, cloud and rain curtailed one of the North Island's most majestic spectacles. Up from the Taranaki plains gracefully tapers an extinct volcano; Mount Egmont, remarkably like Fuji, holds its snowy pate 8,260 feet above the sea.

"I think of Egmont as my mountain, as part of my property," said a dairy farmer,

MOUNT COOK AREA

Tops off New Zealand's
Alpine Grandeur



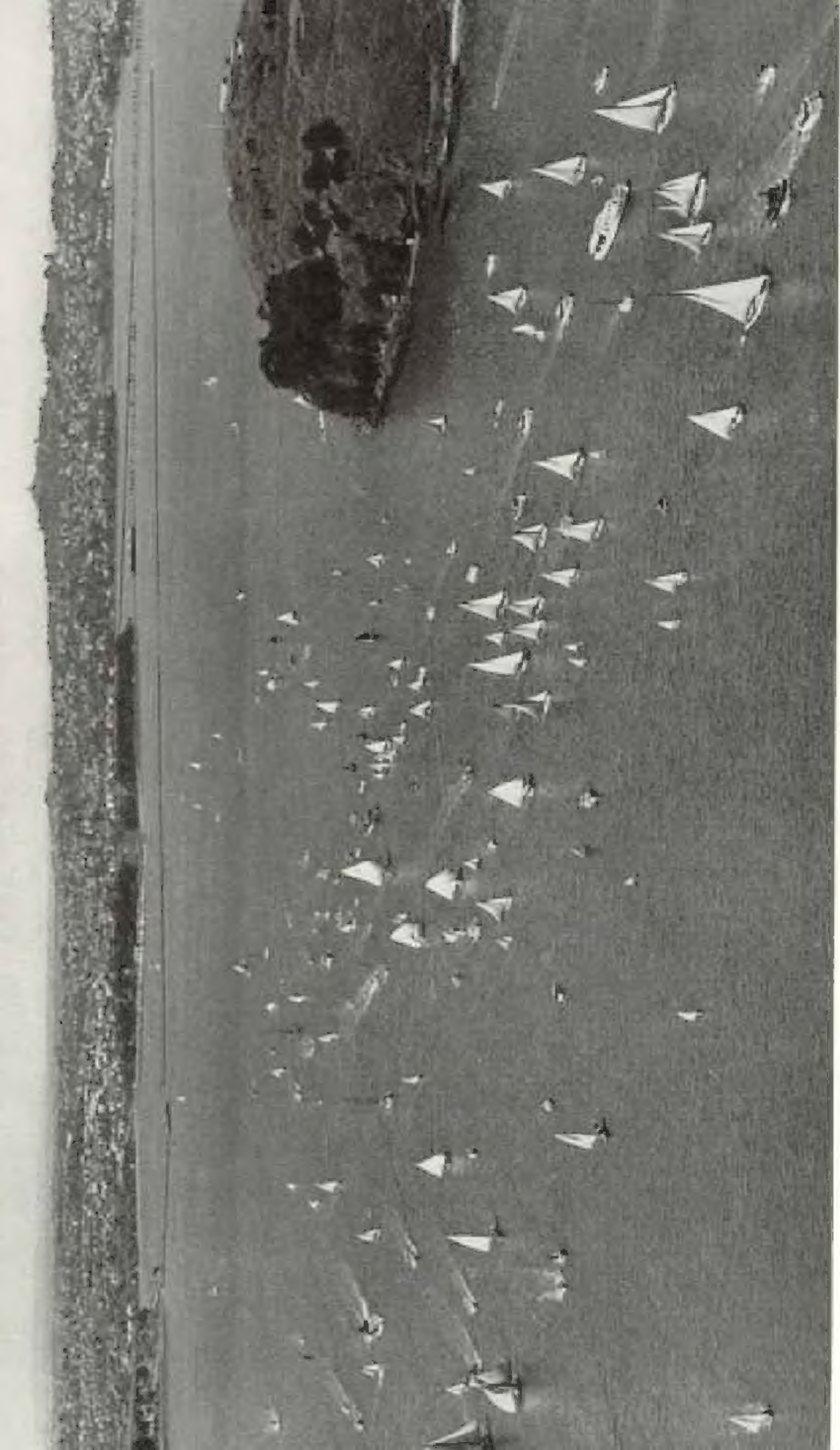
0 10 20
STATUTE MILES
(Main map)



SOUTH ISLAND

Vast Ocean Spaces Isolate New Zealand

Australia, nearest land mass, stands 1,200 miles away. The two countries combined contain fewer people than California; Antarctica supports none. The North Island has more people and arable land, South Island the more spectacular scenery.



Hillocking Sails Stream Out of Auckland Harbor as Yachtsmen Begin a 1,500-mile Race to Sydney, Australia

Nine competing craft, their spinnakers bellying in the breeze, start for the roaring Tasman Sea, one of the severest tests in ocean racing. Scores of speedboats and pleasure launches escort them. *Solweig*, a new sloop from Sydney, won the event, her second competition, in February, 1931.

Tides of Wool Flow as Airily as the Morning Mist

A century ago the first European settlers directed most of their energies to sheep raising. Modern New Zealand, with millions of sheep and cattle, still lives largely on grass (page 421).

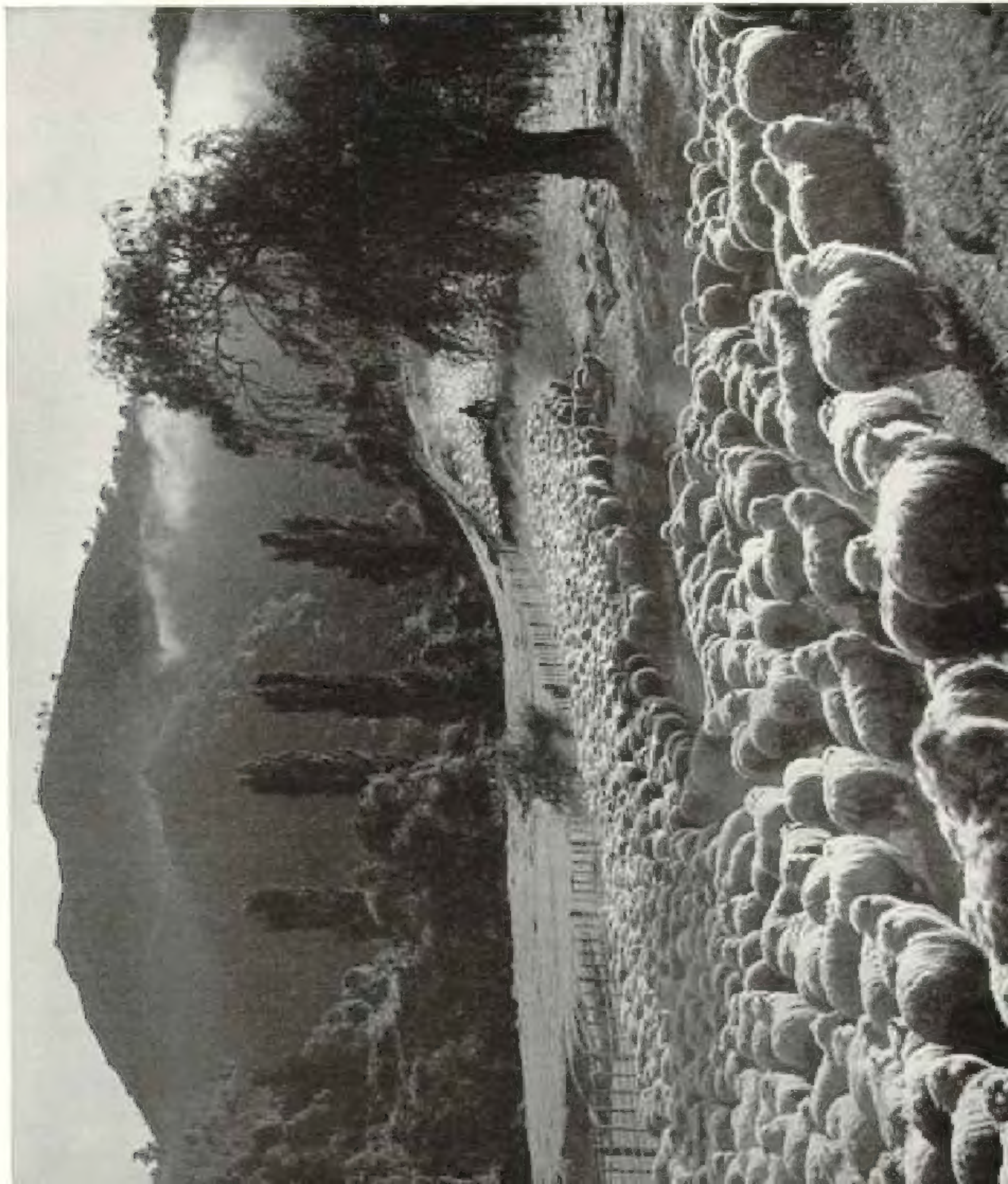
Everything on a sheep station revolves around the isolated homestead, long wool shed, and drafting pen. Routine duties occupy sheep farmers throughout the year. Busiest times come with lambing in September, starting in November and December. In the latter season, men and sheep dogs begin mustering flocks at dawn and may stay on the move all day. Herded into the wool shed, the sheep are shorn with machine-driven clippers by gangs of laborers who move from job to job.

Flocks like this are money spinners. Last year raw wool soared to \$2.80 a pound, highest price in the country's history. Twenty years ago, at the bottom of the depression, it sold for less than 10 cents.

But today's wool growers are not rolling in wealth. Their necessities also show a rise; so does taxation. After a farmer pays for labor, fertilizer, seed, and stock replacements, he has little surplus.

Some of the Dominion's nearly 34 million sheep here move to rich grazing grounds in Ruckituri Valley, North Island. Many sheep drovers are Maoris.

The New Zealand Herald



Reginald Goymer, "and so does everyone else with land around it."

The dominant volcano intercepts clouds which spill abundant rain on Taranaki, one of the most profitable pastoral regions in the world.

Thirty years earlier Goymer and his wife arrived from England. Today they milk 81 Jersey cows on their 160-acre farm. Besides 30 heifers, four bulls, and some bogs, they retain two horses for sentiment; mechanized farming, now Dominion-wide, turns work horses into museum pieces.

"How does dairy farming here compare with that of England?" I asked Goymer.

"When you buy a farm in New Zealand, you automatically get all the livestock feed you'll need," he explained. "It's just there, natural-like, and always growing, too. Not so in England, where farmers must buy tons of grain to tide animals over winter months—a costly business. You see, here in New Zealand we leave cattle and sheep outside the year round; don't need stables at all."

Leaning on a fence post, Goymer gazed across a paddock toward a rich backdrop of such native trees as stately *rimu*, sturdy *totara*, and feathery tree fern. Far-carrying notes of an unseen bellbird pealed like distant chimes. The smell of grass after rain mingled with the odor of moist soil. The farmer kept silent; his eyes beamed satisfaction.

Maori Gives Volcanoes to Dominion

A Maori chief presented to the Dominion the nucleus of Tongariro National Park, where guests at the Chateau can ski, fish, and golf, all in the same day. Roughly in the center of the North Island, it includes three volcanoes: Ruapehu (the island's highest), Tongariro, and Ngauruhoe (still quite active, page 432).

A tribal ancestor climbed Tongariro and claimed for his people all the land he could see from the summit. Suffering from cold on the mountain, legend says, he invoked Polynesian goddesses for warmth. They furnished fires causing thermal activity for which the country is renowned.

To the south lies Foxton. Founded on flax, the community works mechanically with stuff the Maoris continue to weave by hand.

"New Zealand flax, or hemp (*Phormium tenax*), is native to this country alone and must not be confused with linen flax—another story altogether," said one of the managers of the works.

"Our mill's among the few in the world handling *Phormium*. Other countries are just beginning to import the seed."

Phormium thrives in swamplands. Thick sword-shaped leaves, five feet or more in

length, contain valuable fiber. Working 5,000 acres, the Foxton firm processes the flax for wool baling, plasterers' and upholsterers' hemp, and multi-purpose matting, including that used on beehive bottoms. In World War II the mill supplied the U. S. Navy with fiber for cordage.

Centuries before Foxton found prosperity in flax, the Maoris scraped the leaves with mussel shells and wove the fibers into clothing, mats, baskets, and rope. Often they decorated their handiwork with vegetable dyes from bark or berries. Many still keep the craft alive.

Ships Moor at Main Street

Wellington, oldest and second largest city, became New Zealand's capital at the age of 25. To this near-geographical center and hub of transport, the seat of government moved in 1865 from Auckland. And the marble solidity of Parliament House looks as if it's there to stay (page 428).

The 20,000-acre hill-girt harbor takes ships of all sizes and flags to the city's heart. Residences perch on slopes behind the port (page 446).

Across the water, Lower Hutt creeps up a wide valley. In some ways the growing community of 40,000 persons is to Wellington what Long Island is to New York City.* Here I saw masses of new homes, plus others under construction. Acres of modern factories swell with the overflow from the space-limited metropolitan area. Much construction has sprung up recently on ground that formerly kept Wellington in green vegetables.

The Government owns and operates all main railways. One of its biggest workshops sprawls in Lower Hutt. I walked through a series of sheds which build or repair locomotives, tenders, and passenger cars. Amid all the grime and pounding racket, steam, grease, smoke, and heat, one man in the foundry kept a vase of fresh Iceland poppies.

Straight from this strident inferno I walked into the cool, quiet dignity of Wellington's Government House. There I lunched with Governor General Lord Freyberg, V.C., G.C.M.G., K.C.B., C.B., K.B.E., D.S.O., LL.D., D.C.L., and Lady Freyberg.

A veteran of two world wars, Lord Freyberg earned the highest British military honor for bravery in the first and had command of New Zealand forces in the second. Today Dominion troops in Korea reflect the fighting spirit of their country's most respected soldier.

New Zealanders revere a former Governor General, Lord Plunket. Wholeheartedly he

* See "Long Island Outgrows the Country," by Howell Walker, NATIONAL GEOGRAPHIC MAGAZINE, March, 1951.



A Visitor Greeted a Maori Idol in Polynesian Fashion

Nose pressing, the ancient way of welcome, endures among descendants of the canoe-borne immigrants who reached New Zealand many centuries ago.

Carved of wood, this huge head guards the entrance to a tribal meetinghouse in Waitangi, North Island. There Maoris in 1840 signed a treaty bringing the country into the British Empire.

New Zealand's white and brown men once fought like Americans and Indians, but now live in harmony. The 100,000-odd Maoris make good citizens, superb soldiers, and loyal friends. They have equal rights in government.

➤ Nature's Fireless Cooker

No slaves to kitchen stoves, Maori women cook basket-held food in Rotorua's boiling springs. For bathing and laundry, they divert the water to cooler streams. These two wear their tribe's old-time tattoo marks on lips and chins. Their flax skirts and woven cloaks come out of storage only on festive occasions.

© National Geographic Society
Endorsement by Harold Walker







New Zealand Nurses Take Steps to Save Lives

From the New Zealand Nurses' Association, a group of nurses, including a nurse from Auckland, have been working on a project to improve the health of the community. The project is called 'New Zealand Nurses' Association' and it is a project to improve the health of the community.

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Students Absorb Sun

A group of students from the New Zealand Nurses' Association, including a nurse from Auckland, have been working on a project to improve the health of the community. The project is called 'New Zealand Nurses' Association' and it is a project to improve the health of the community.

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Adams and Giroux in the Washington Circle. A group of Washington Harbor. A View from the War Memorial and Cemetery.

Game Laws Protect the Toketua, a Shellfish Named by the Maori

There is a small stream on the coast of New Zealand, where the Maori people have a special interest in the Toketua, a shellfish named by the Maori. The Toketua is a small, round, white shellfish, which is found in the stream. The Maori people have a special interest in the Toketua, and they have a special law to protect it. The law says that it is unlawful for any person to take more than 20 Toketua in one day.

Rule. A person who takes more than 20 Toketua in one day is liable to a fine of 10 shillings.

By the Hon. J. G. Seddon.





Three people in a rocky landscape. The person on the left is standing and holding a long spear. The person in the center is crouching and holding a spear. The person on the right is crouching and holding a long staff or spear.

Three people in a rocky landscape. The person on the left is standing and holding a long spear. The person in the center is crouching and holding a spear. The person on the right is crouching and holding a long staff or spear.





Percheron Horses and Cattle Cared For the Judges at Hamilton's State Annual Agricultural Show

A copy of the report of the judges of the Percheron Horses and Cattle Cared For the Judges at Hamilton's State Annual Agricultural Show, 1884, is published by the State of New York, Albany, 1884.





A Yard of Front Hang in Appearing Orange

New Zealand has a long and rich history of environmental conservation. From the early days of European settlement, there has been a strong emphasis on protecting the natural beauty of the country. This commitment is reflected in the establishment of numerous national parks and reserves, which cover a significant portion of the land area. The government continues to work closely with local communities and environmental groups to ensure the sustainable management of these areas. This approach has helped to preserve the unique biodiversity of New Zealand, including its iconic native species like the kiwi bird. The country's commitment to environmental protection is a key part of its national identity and a source of pride for its people.

The results have been summarized and are shown in Table 1. The results show that the average number of large stockfish caught per trap per day was 1.5, and the average number of small stockfish caught per trap per day was 1.5.

★ **1947 The Big Bear Creek**

The new survey was posted online and mailed to North Carolinians. For the purpose of this research, the proportion of people who answered "no" to the survey question, "Do you have a gun in your home?" is the focus of the study. The survey was completed by 1,000 randomly selected

2 4 6 8 10

Table 1

Nesting Gannets Show Little Fear of Humans

They had been so taken with the gannets' behavior that they had been unable to leave the beach. The birds were nesting in the sand, and the gannets were so tame that they had been able to get within 100 yards of the birds. The birds were nesting in the sand, and the gannets were so tame that they had been able to get within 100 yards of the birds. The birds were nesting in the sand, and the gannets were so tame that they had been able to get within 100 yards of the birds.

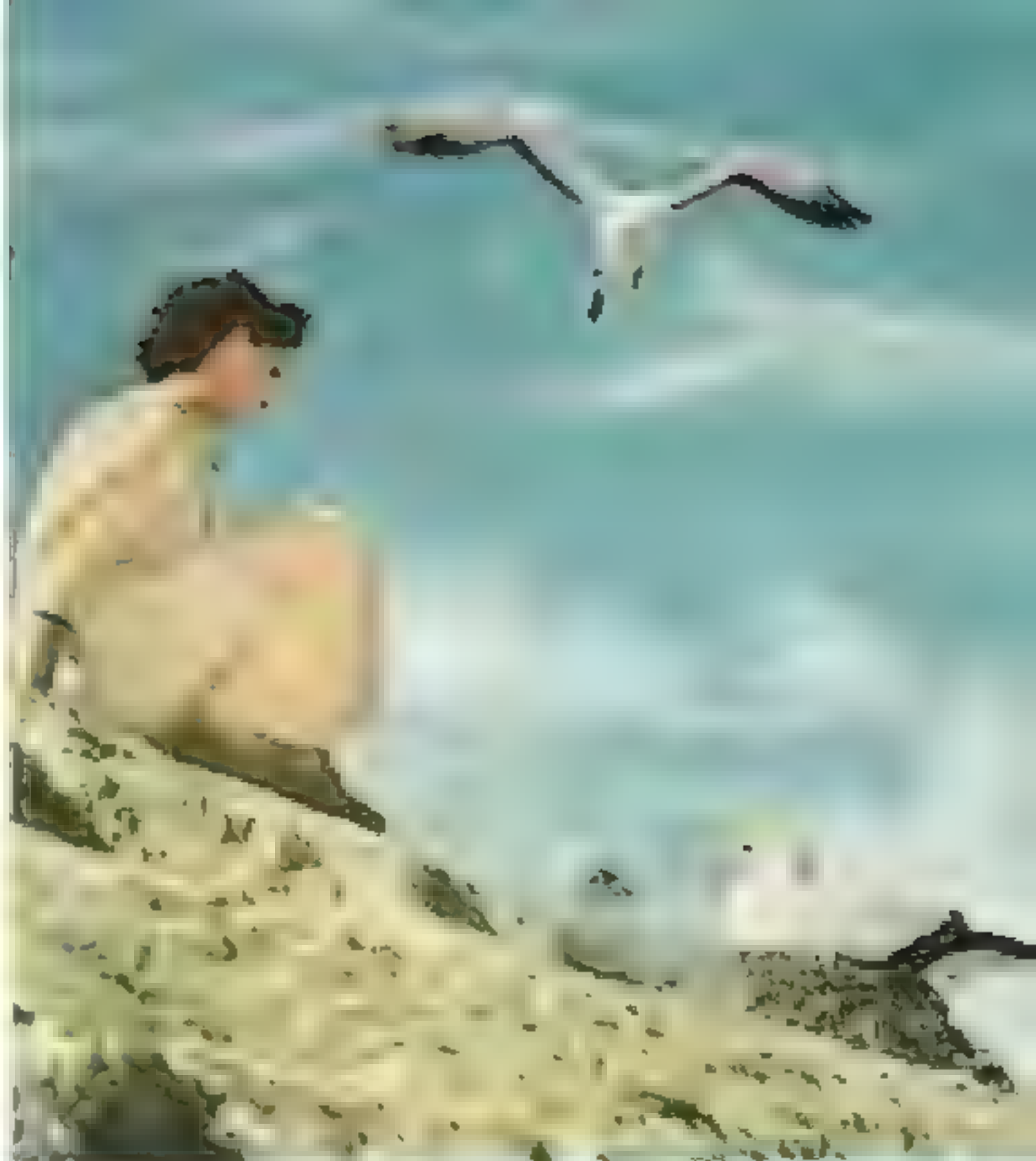
Wind and Wave Carved "Hole in the Wall"

The sea was calm, and the wind was light. The sea was calm, and the wind was light. The sea was calm, and the wind was light. The sea was calm, and the wind was light. The sea was calm, and the wind was light. The sea was calm, and the wind was light. The sea was calm, and the wind was light. The sea was calm, and the wind was light.

By Stephen L. Johnson

Illustration by Thomas M. Moore

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Driver and Dog Herd Cattle Through a Wild Gorge Decked with Tree Ferns

The scene in this photograph is from the New Zealand Forest Department. A similar scene occurred in the same place in 1911. The dog is a New Zealand dog, a breed of dog, and the cattle are of the same breed.



Livestock Owns the Right of Way on Narrow Lanes or Alam Thoroughfares

Cattle, sheep and pigs are given the right of way on narrow lanes or alam thoroughfares in New Zealand, and the same rule applies to the roads in the Malay Peninsula.



* Singing Mayan Girls Play Pasos de Raton

A group of young girls, dressed in traditional Mayan clothing, are performing a dance in a courtyard in Chichén Itzá, Yucatán. The girls are singing and playing a small drum. The dance is a traditional Mayan dance, and the girls are performing it with great skill and grace. The courtyard is paved with stone, and there are trees and other buildings in the background.

The girls are performing a dance called "Pasos de Raton," which means "Steps of the Mouse." This is a traditional Mayan dance, and the girls are performing it with great skill and grace.

The girls are performing a dance called "Pasos de Raton," which means "Steps of the Mouse." This is a traditional Mayan dance, and the girls are performing it with great skill and grace.

* *Verónica González*

* *Verónica González*





Maori Mother and Daughter Weave Dyeed Reeds for a Decorative Wall Panel

When asked the reason why they were weaving, the woman said: "We are weaving for a decorative wall panel. We are weaving for a decorative wall panel. We are weaving for a decorative wall panel."

supported a lifesaving movement, begun by the late Dr. Truby King, which now gives the nation one of the world's lowest infant mortality rates and highest life expectancies. The Royal New Zealand Society for the Health of Women and Children is better known as the Plunket Society.

In 1907, the year the Dominion was born, Dr. King began the work that so efficiently checked wastage of infant life. In his home at Karitane near Dunedin he and his wife treated the first patients. For his eminent services to motherhood and early childhood he received a knighthood.

Now every town and city has its Plunket Rooms. The Society also maintains six Karitane Hospitals (page 429). At one of these in Wellington I met a grand-niece of Dr. Sir Truby King. Following family tradition, she hoped to help New Zealand's annual crop of some 42,000 babies live to be useful citizens.

In 1898 New Zealand became the first British colony to introduce old-age pensions. Since then, the Dominion has led the world in providing for people unable to care for themselves properly because of age, widowhood, orphanhood, invalidity, sickness, unemployment, or occupational disease. A system of medical, hospital, maternity, and other benefits is aimed at safeguarding and improving the nation's health.

To make this possible, persons 16 years of age and over pay so that all may profit.

Much money is spent, however, in quite a different way. A friend accompanying me along a Wellington street asked, "Notice how grim everyone looks?"

"Well, no, not exactly," I said.

"It's a fact, though," he insisted. "They've all got money in the horses, and they're worrying about it."

Horse racing in New Zealand has by far the greatest following of any sport; enthusiasm for it amounts almost to mania (page 433).

Introduction to South Island

Crossing Cook Strait on the ferry from Wellington to Nelson, South Island, I shared a cabin for the 14½-mile overnight voyage.

"Care for a smoke?" asked my cabin mate, offering a local brand of cigarettes.

"Thanks, but how's your supply?" I asked.

"It's good," he said. "I make the time."

For a factory in Wellington he journeys frequently to the Nelson district, which grows all of New Zealand's commercial tobacco.

"But can't overlook fruit and hops," he warned. "They're important crops, too, in this region."

Orchards begin on Nelson's outskirts and range over several thousand acres. They in-

clude apples, pears and peaches, quinces, black currants, and raspberries.

"I think ours is oldest in the area," said one orchardist. "It's been here 80 years. My dad was the first to export apples from New Zealand. He sent a shipment to London 40 years ago."

Nelson warmly claims more sunshine than any other town in the Dominion. Backyard farmers soak it up in 250 glasshouses covering 24 city acres. Between August and May they grow more than a thousand tons of tomatoes. Some also raise grapes and cucumbers and do nursery work. One concern supplies two-thirds of the tobacco seedlings used by New Zealand's plantations.

Just five miles west of Nelson I watched farmers at Motueka cultivating dusty tobacco fields. One planter described the current drought with a findery phrase capable of kindling this page. Normally, 4,000 acres in the district yield four and a half million pounds of leaf.

While in Motueka I moved from tobacco plantation to hop garden, or vice versa. These two crops checkerboard the countryside. I saw men, women, and children weeding out young hop vines and training the best to climb vertical strings. A diagonal view across the field looked somewhat like a tropical cow-pen; the air teemed with string.

Tame Fels Eat Pudding from a Spoon

Near the little town of Takaka flows the Anatoki River where a woman tames a colony of eels. To oblige me, she called a dozen to the water's edge and fed them pudding with a spoon. One about four feet long allowed his mistress to pick him up and stroke his slippery black back.

"During the Christmas holidays," said she, "the eels get more to eat than me. I even lose weight, feeding them for tourists. And the worst of it is, this busy season comes same time as haymaking; I have to feed fed hands as well as eels."

Leaving Takaka, I rode south along an empty road, twisting, climbing, and coasting through wild country. At Murchison, a by-gone gold-mining center that turned to dancing, I met the Buller River; stayed with it through deep, rugged, bush-clad Buller Gorge to reach Westport in the evening.

Early next morning I set out with a mining engineer for neighboring coal fields. We drove 3,000 feet up into clouds muffling Stockton, one of New Zealand's largest open-cut coal mines. With a lustrous seam 40 feet thick, it has a potential supply of 50,000,000 tons.

We returned to sea level, then climbed 2,000 feet to reach Denniston. This mining town perches on the edge of a precipice like a



Dragonlike Tuatara Forms the Only Living Vestige of a Group of Ancient Reptiles

Feeding on insects and spiders, the tuatara grows to a length of two and a half feet. A rosette on the head marks the pineal, or third eye, and it is a nonfunctional organ. Formerly, tuatara roamed the mainland; now it inhabits a few outlying islands. This species lives in the Auckland Islands (pages 419, 460).

me level fortress. An earthquake recently cracked the cliff which supports the community. Engineers hastily reinforced the colossal rock with thick steel cables; if it crumbled, most of Denniston would go, too.

In 1877 Denniston started west-coast coal rolling to market. Since then, mines in the Buller district have produced more than 32,000,000 high-grade bituminous tons. All this coal goes to Westport, biggest coal-shipping center, for Dominion-wide distribution.

Gold Splits the Wilderness

But the gold fields opened up to west coast and South Island mining. Within a few months of the discovery in the early 1860's, population multiplied over fifteen times Australia's rabbits. Cities born overnight swarmed with prospecting thousands. A dozen years later easily worked fields' production fell off, but widespread diggings had cracked the wilderness.

Today from alluvial and quartz sources the west coast wins 10,000 ounces plus of gold per year. Annual dredgings more than triple the figure. To the Dominion's total this western district contributes a generous third.

The west coast reminds me of Oregon's

spectacular shore; off-lying sea-sculptured masses knock back a wildly foaming surf. As a result of geological ups and downs, limestone layers rise from the beach like mushroom stacks of pancakes (page 44), and through blowholes in the curious formation heavy weather pumps salty air.

My southward route along the coast crossed streams gray and swollen. From the snow-furied backbone they rushed in a rough and tumble race to the sea. I heard at intervals the tremendous call of a little bird, but it seemed out of tune with the cold air.

Vegetation suggestive of the tropical tropics in winds from Antarctica grows here in palm proportions or grow like soap over sheer rock faces. Right into luxuriant rain forest near the sea advanced the enormous Franz Josef and Fox Glaciers.

I returned almost to Greymouth; then my car turned east, labored over the Southern Alps and coasted onto the Canterbury Plains.

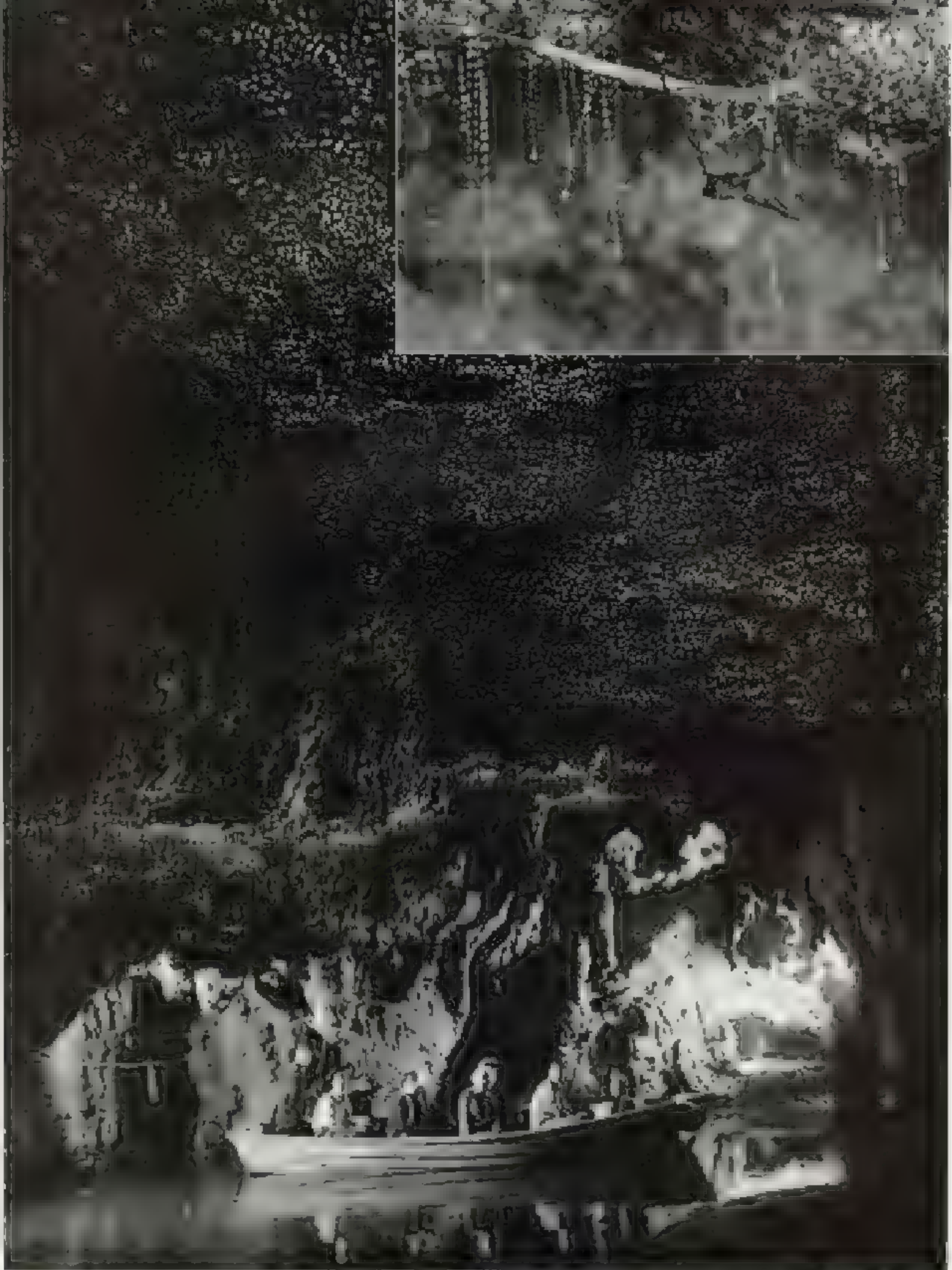
Some 174,100 residents and nearly as many bicycles make Christchurch largest and most traffic-hazardous of South Island cities. Yet, with Anglican Cathedral and clustered colleges, parks and oft-bridged river, it has the



Wellington, New Zealand, 19th March 1900

Purple Hacks, Worn as Weather, Spied in Black Ties

The purple hacks, worn as weather, spied in black ties, are a common sight in the streets of London. They are a kind of weather-worn, black tie, which is worn by the men of the lower classes. The purple hacks are a kind of weather-worn, black tie, which is worn by the men of the lower classes. The purple hacks are a kind of weather-worn, black tie, which is worn by the men of the lower classes.



Millions of Shining Glowworms Make Watrous Caves an Insect's Milky Way

But only a few are big enough to see with the naked eye. Not even a dozen of the insects can be seen at any one time, but when the cave is lit up with a powerful light, the glowworms are seen in great numbers. The glowworms are not only seen in the cave, but also in the surrounding area. The glowworms are not only seen in the cave, but also in the surrounding area. The glowworms are not only seen in the cave, but also in the surrounding area.

contested the formidable fastness. Over remote passes he drove sheep flocks from the Levels in Canterbury, sold them far enough away to escape suspicion.

A Dog Convicted in Court

Mackenzie trained his sole accomplice, a dog, to open gates at night, drive stolen flocks through river torrents, along unknown upland tracks, and down valleys never seen by other men. Finally the law caught and deported Jack. The dog was tried, found guilty, and destroyed, some say hanged!

Crossing still black Mackenzie country, I followed Lake Pukaki's west shore north to an isolated alpine resort, the Hermitage (pages 454-455). A warm sun dropped behind icy heights; cool shadows darkened valleys. Day's dying glow played on New Zealand's loftiest peak and steadily faded it a faint pink. Then night completed its solitude.

Maoris called this peak Aorangi, the Cloud Plover. In honor of the memorable British navigator, white men changed the name of the 12,349 foot monarch to Mount Cook. With other peaks above 10,000 feet, it forms a mighty alpine mass (page 420).

Satisfied to let my lenses explore the snow-bound summits, I crawled over monotonous moraine and crunched several miles up the Tasman Glacier (page 451). By a river tunnel in one of the Temperate Zones' largest cakes of ice I entered a natural deep freezer as big as a lungahow. Powerful elements carved it with rugged abandon, but tinted the walls soft pastel blues and greens (page 457).

South of Mount Cook, vacationists crowd Queenstown beside Lake Wakatipu. With 510 sight-seers I made a steamer excursion to the lake's west end. At that point, 21 miles separated me from Milford Sound; but I had to travel 200 to reach it by car.

Starting from Queenstown, the road clung to precipices, spanned swift, narrow rivers and wide valleys. It crossed stony desert, paralleled long Lake Te Anau, penetrated dark beech forests, and climbed mighty heights under snow. It tunneled a mountain of solid granite and cowered under massive cliffs barely less majestic than those of Milford Sound itself, most spectacular of all New Zealand's fords. I have seen few as grand even in Norway.

Cruise to Fiordland

Dolphins frolicked around the bow of the *Alert* moving smoothly over Milford Sound. The 72-foot launch slipped by Mure Peak, a mile-high rock rising sheer from the water. Edging past cascade-faced walls, she began a 10-day voyage through Fiordland with 11 passengers (pages 456, 457).

Along this glacier-hewn southwest coast the *Alert* navigated ten horns all different, all undoubted, all wholly magnificent. We glimpsed two fishing boats and one group of three ambitious hikers—nothing else human.

Among virgin woodlands we found tree-daisies, picked frail orchids, and saw mossy stumps left by Captain Cook's men. On or near shore, sand flies railed us relentlessly. A bull seal lunged at me on a rocky islet.

Still using as a basis charts drawn up by Captain Cook in 1773 on his second voyage, the *Alert* probed steep-walled dead-end inlets deep in unsurveyed territory. Around us towered peaks "of a stupendous height," according to Cook, "covered in places with large patches of snow, which have lain there ever since the creation."

I photographed mountains, waterfalls, and rivers for which I could find no names on any map; they fell within vast blank areas cartographers can only mark "unexplored."

Farthest South in New Zealand

Captain Cook, in one of his rare navigational failures, made Stewart Island a peninsula. Twenty-mile-wide Fovea or Strait separates it from southernmost South Island. Long ago the Maoris named it Rakitara, Land of Glowing Sky.

Exactly the size of Scotland's Skye or almost half as large as Long Island, New York, Stewart has the main-indented coastline and jickle weather of the former. Five hundred residents live, accommodate visitors, or simply live in idle ease.

Most of the inhabitants and the island's several automobiles gathered at the wharf in Halfmoon Bay to watch our arrival at Ohau, the only town.

One of those places which perpetuate primeval New Zealand, Stewart offers natural sanctuary for the ferning wild life and grows a botanical profusion. And imagine what inspired such local names as Murderer Cove, Pissy Cove, Helder Island, Sinner's Cove, Glory Cove, and the old sailor's name for our Retreat. Like Robert Louis Stevenson's notion of *Treasure Island*, "it contained harbours that pleased me like seaweeds."

Returning to the mainland, I drove from Invercargill to a petrified forest at Curio Bay. More curiously I went to near-by Niagara to learn how the hamlet got its name.

"An early settler gazed at the two-foot falls at our little river," explained the local school teacher, "and sarcastically called it 'Niagara.' The joke spread and the village just grew up with that name."

Dunedin is literally the Edinburgh of the southern Hemisphere. From the Celtic *Dunedin* comes Edinburgh's name. Founded

by Scots in 1848, Dunedin today remains New Zealand's most Scottish city.

Misty climate and gray stone buildings contribute to the city's Scottish look. On the principal street—called Princes, of course—tweedly folk of ruddy face speak with the unmistakable lurr. High tea and fish, wool and ships, banks, churches, schools, and the Dominion's oldest university round out Auckland's distant counterpart.

Dunedin Proud of Its University

Each of New Zealand's four principal cities points proudly to its pet feature: Auckland the harbor; Wellington the seat of government; Christchurch the cathedral; Dunedin the university. A discussion of Dunedin's highlights invariably begins brightly with its academic atmosphere and ends with a short description of the weather.

Alex Black of Dunedin took me to Roxburgh, 60 miles west of his city. He showed me some of the Dominion's main stone-fruit orchards. Here the first apricots planted in New Zealand thrived 80 years ago; many of the original trees are still producing.

A warm, sweet aroma of steaming peaches floated heavily through a factory which receives tons of fruit suitable only for jam: the raw product would spoil before reaching Dunedin or other big markets.

"This place," said Black, "gets local farmers out of a jam by getting them into jam."

From Dunedin I drove north along the coast. At the port of Lyttelton, car and I went aboard the night ferry for Wellington.

"Beware of Wind" warn signs by the road riding the Rimutaka Range northeast of the capital. Others announce, with precise formality, "Deceptive Bends," "Hill—Change Down," and "One-car Bridge, Give Way."

Crossing mountains gleaming with golden gorse, I rolled north over pastoral plains of the Wairarapa Valley.

Napier Gains by Nature's Whim

Napier now knows that it's an ill earth that doesn't quake some good. In 1931 the city got the biggest shock of its life. The land heaved like a storm-rocked ocean; buildings crashed, killing scores of persons.

But this earthquake raised Napier's coastal area some eight feet; reclaimed 10,000 acres once useless for anything except pleasure boating and indifferent fishing; and added potential pastures to Hawke Bay, which specializes in sheep grazing. Furthermore, up from the city of rubble rose a new Napier, modern and shockproof.

A seasonal wool check worth millions of dollars rewards the district for handling a fat eighth of the Dominion's flock. I waited

through Napier warehouses overflowing with fleeces for coming sales. When I attended one of these international auctions, prices soared to heights altogether foreign to the business (page 425).

"Why?" I asked experienced stockmen.

"Mostly a matter of supply and demand," one said. "The world suddenly wants more wool than is available, and buyers don't seem to care about costs."

"Some countries—America, for example—have had decreasing sheep populations," explained another, "and they are now urgently requiring large amounts of wool."

Up the coast at Cashmere, wool was flying at a frenzied pace in this normally calm town. Shearers couldn't clip fast enough to satisfy sales and shipments. Bales moved through warehouses as if they were perishable foods.

This center of a rich farming region prospers on a bay Cook called Poverty. Maoris have lived here from his first landing in New Zealand before he could collect supplies.

Maori History Chiseled in Wood

In the Maori meetinghouse at Waipiro Bay, Pine Taiapa chisels all day and into the night. His intricate carvings of grotesque figures decorate the village's most important building. He works to immortalize ancestral princes, princesses, and legendary events in the long life of his people. His art perpetuates ancient Polynesian culture in New Zealand (page 442).

With Taiapa I lived two days. We shared a tin washbasin, ate roast wild pig and sweet potato. I followed his work from initial adzing to fine tool touches. He could take a six-foot totara log straight from the forest and in a matter of hours transform it into fanciful history exquisitely chiseled. Thirty-two years of practice made his every stroke quick, sure, and clean, and perfected his patterns.

East Cape country is mostly Maori and well off stage. White residents are rare, tourists few. The brown people earnestly work for a living on their own land, building homes, fencing pastures, raising sheep and milk cows, growing vegetables, sending children to Maori schools, and attending their own churches.

These Maoris take their fun in little towns to which they ride on horses. They like movies, and fill a Rotorua theater on Saturday nights. Until the management made it impossible, horsemen habitually rode right into the establishment. Now they just carry saddles inside.

I followed 600-year-old Maori tracks inland to Rotorua. Still headquarters of the Arawa tribe, this center of the country's remarkable thermal region has become pre-eminently a



Summer Hikers Grinch over Tasman Glacier, an 18-mile-long River of Ice

South Island's rugged and majestic 17,000-foot 22,000-year-old mountain range, the Tasman Glacier, is a 18-mile-long river of ice that flows down the spine of the island, from the snow-capped peaks of the Tasman Range to the sea.



Axe and Saw Flash as Woodchoppers Race

WATERBURY, Conn. (AP)—The annual saw and axe competition, known as the "Woodchoppers Race," is held in a field here, where a crowd of about 100,000 people, mostly from the surrounding area, gather to watch the event. First to finish is the winner, and a prize of \$100 is given to the victor.

The race is held every year, and the winner is usually a local resident. The race is held in a field here, where a crowd of about 100,000 people, mostly from the surrounding area, gather to watch the event.

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AP Wirephoto Service

AP Wirephoto Service





Christchurch Celebrating Its First 100 Years, Hangs Out the City Shield

Most people in New Zealand know Christchurch as a port town of 100,000, not almost as many as were in the first century of its founding. The first settlers, and the city's first mayor, were not from New Zealand, but from the United Kingdom. The American Consulate opens its doors to the public.



APRIL 1911

40

Glaciers Bulldozed Hooker Valley; Summer Now Carpets the Plain with Grass

Ice once covered most of New Zealand. It has now melted and all of the ice has gone. The Hooker Valley and the Hooker River are now the only places where the ice has not yet melted. The Hooker River is now the only place where the ice has not yet melted.



A Large Resort Hotel Appears Lost at the Foot of South Island's Mighty Pinnacles
 A large resort hotel, the popular Pinnacles Hotel, has been found lost for 100 years and may be the first New Zealand hotel to have been directly buried under a volcano, one of the dramatic features in New Zealand.

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The Peak Tower at Allendale Michigan



5 A Glacier Laps her Gaze into Nature's Deep Forest

At midday, the sun is high in the sky, and the forest is bathed in its golden light. The air is still, and the only sound is the soft rustle of leaves and the gentle hum of insects.

The forest is a vast, open space, with tall, slender trees reaching up towards the sky. The ground is covered in a thick carpet of green grass and wildflowers, and the air is filled with the scent of earth and foliage.

As the sun sets, the forest takes on a new life, with the colors of the sky reflecting in the water and the trees.





Auckland, N. Zealand
145
H. J. COLEMAN, N. Zealand

Good Storage, Finding a Vast Waste of Meat Put Port Claimers on the Map

New Zealand used to be known for its good climate and for the fact that it was a good place to grow fruit. But it was not long ago that it was found that the climate was not so good for the growing of fruit as it was once supposed to be. The fact that it was a good place to grow fruit was found to be a mistake. The fact that it was a good place to grow fruit was found to be a mistake. The fact that it was a good place to grow fruit was found to be a mistake.

tourist mecca. And the healing properties of countless hot springs and medicinal waters draw north-traveled invalids (page 427).

Local Maoris, for fluid fees, eagerly guide visitors to geysers, boiling pools, champagne lakes, sintered terraces, steaming waterfalls, and mud volcanoes. Both Maori sexes dress up or down in long-discarded ancestral costume to stage traditional dances; they sing enchantingly (page 440).

In a kitchen at a hotel, Fred and Paul operates a telephone switchboard. Some nights he lends his own dance band playing saxophone or clarinet.

"Lost my eyesight during a bayonet charge in North Africa," he told me. "Then I was a prisoner in Italy for a year."

Tai works for an association of the blind, helps others to learn Braille and handicrafts.

"We want to teach the blind to live," said he, "not just eat and sleep and wait."

Maori and White Mao Team Up

Maoris find employment in the one and a quarter million acres of State forest around Rotorua. They team well with white men on logging jobs, and half the workers at the Dominion's biggest sawmill here are Maoris.

An officer of the New Zealand Forest Service spent two whole days showing me the magnificent timber stands southeast of Rotorua. We divided our time between indigenous and the so-called exotic woods, mainly imported conifers.

Of New Zealand's approximately 112 native species, not many have value as lumber trees; the best of these—kauri, totara, and rimu (red pine)—belong to a vanishing type. The State tries to preserve those that remain and restores resources with quick-growing, all-purpose types from other countries (page 452).

Monterey, or insignis, pine, for example, grows several times faster in New Zealand than in its native California. Importations like Douglas fir, Western yellow and Corsican pine have shown phenomenal progress.

Imported wildlife has also thrived remarkably—too remarkably. Deer have caused such destruction to forests that an army of skilled stalkers works full time to control them. Possums and rabbits also create a serious nuisance. But brown and rainbow trout make New Zealand an anglers' paradise (page 436). Big game fish off the North Island round out this sportsman's El Dorado.

Captain Cook beat me to Coromandel peninsula's Mercury Bay by 182 years (page 437). "My reasons for putting in here," he logged, "were the hopes of discovering a good Harbour, and the desire I had of being in some convenient place to observe the Transit

of Mercury . . ." He might have added, "Mission accomplished."

Putting in at Whitianga, only town on this bay, I discovered exceedingly friendly people and observed the trend of the times. Declining deep-sea fishing invitations hurt like refusing potatoes in Maine. Even the town baker, also a master of marlin, advertises: "... what they say of Mercury Bay—Not only the finest swordfish, but the very best of bread and pastries, too!"

Silent Giants of the Ancient Forest

All too hastily I left Coromandel for the peninsula north of Auckland. Beyond Dargaville I parked beside the dusty road and entered Trounson Park, a cool 975-acre preserve of towering kauri trees. My footfalls and a few birdcalls made rare sounds in this world of wood.

Farther along the main route I penetrated an even greater kauri domain, the Waipoua Forest. A sign on one monarch says: "This tree is 43 ft girth and 42 ft in first limb. It is probably 1,200 years old and contains 12,000 superficial feet." Through 20 miles of the disease reserve wound my road, past graceful tree ferns and majestic giants.

I came out of the woods near the southern end of Ninety Mile Beach. Instead of driving over this empty stretch of sand to New Zealand's northernmost point, I went for a refreshing swim in the lapping surf.

Next day I learned that sharks in the vicinity keep a local factory going. Oil from their livers contains valuable vitamins.

Farther east at Whangarei Harbour another fish factory warned against swimming.

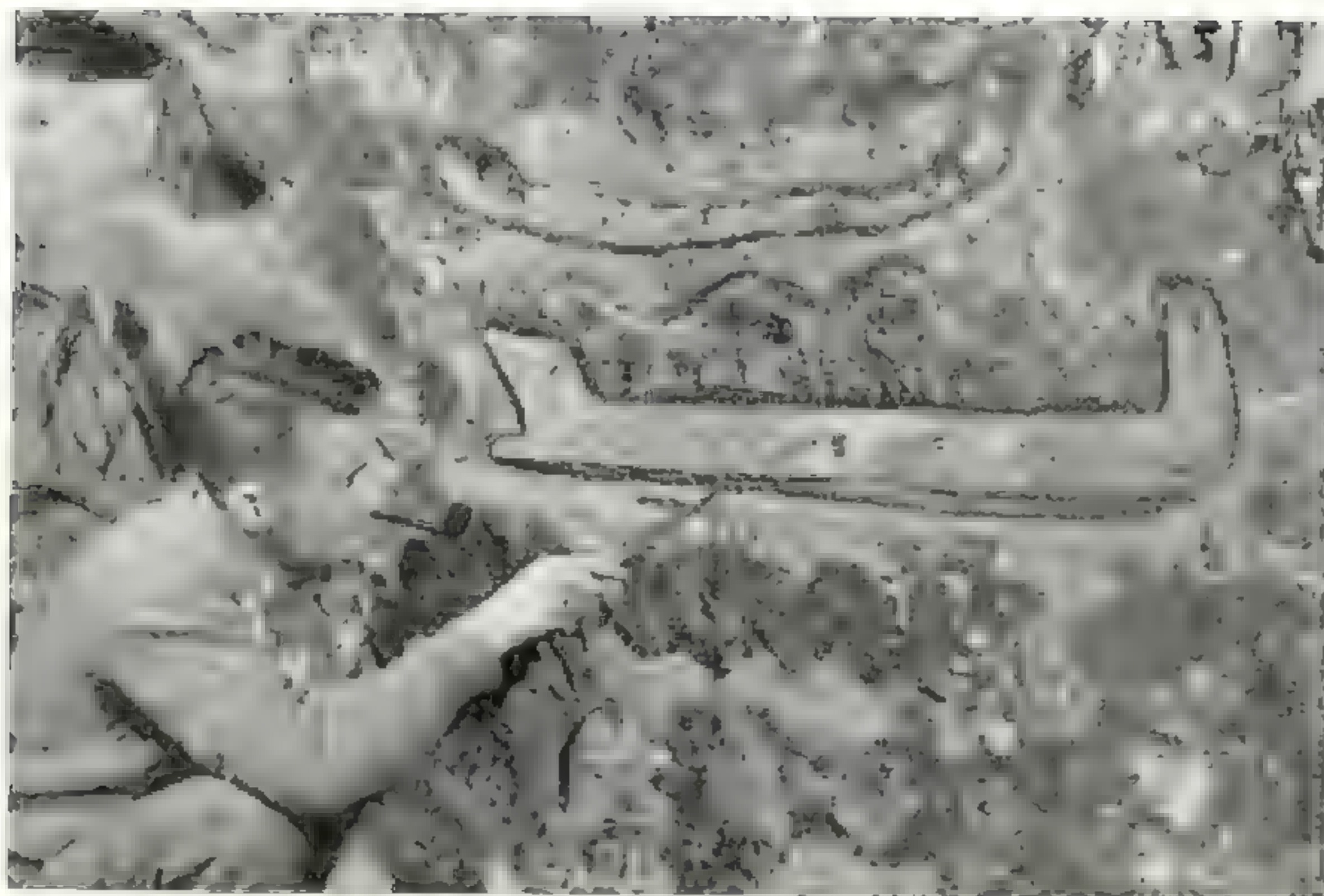
"Yes, we handle sharks," said the manager. "We ship fillets to Australia, but process livers for oil. Our snapper and hupuka (grouper) go to domestic markets. We export about 65,000 pounds of crayfish tails to America each year."

Birthplace of the Dominion

I drove southeast to Kerikeri, surrounded by citrus orchards and history. Here stand New Zealand's oldest wooden home and a stone state once called the country's most substantial building—former headquarters of the first missionaries to reach this land.

Eight miles away at Waitangi a Georgian colonial residence in 1840 witnessed the signing of a treaty which made New Zealand part of the British Empire. A tall flag-staff on the lawn marks the spot where a huge gathering of Maoris and whites assembled for the ceremony (page 427).

Waitangi looks across the Bay of Islands to Russell, New Zealand's initial white settlement. Originally called Kororareka, it sup-



Cave Art Mirrors the Canoes That Carried Maori Pioneers Across Uncharted Seas

...the unknown to discover another new land thousands of miles from their overcrowded homelands—Hawaii or Tahiti (page 421). They fashioned their sturdy craft from logs 60 to 100 feet long. An ancient canoe is carved into rock face in the Reinga Caves.

ported the country's first post office and customhouse. In the beginning of the 19th century it harbored hundreds of whaling vessels. Rough-and-ready crews crewed some 20 hotels and grogshops. Today deep-sea fishing craft fan out from here for waters known to big-game anglers around the world.

From the Bay of Islands the colony town moved in 1841 to a Maori village on a more sheltered harbor and called itself Auckland. Now a place of more than 300,000 people, it moves rapidly toward its destiny of big city. In the last five years population gained another 47,000 along with the usual housing worries (pages 424, 429, 430, 441).

Living Fossil a Reptilian Remnant

At his lone in the Auckland zoo, a tuatara (*Sphenodon punctatus*) couldn't care less for the city's future or his. (Listed page 444). Grayish-black, scaly, and stony, the lizardlike species once possessed a so-called preal "eye." Now, lethargic in its movements, it scarcely bothers to bat one of a lateral pair.

The tuatara is believed to occur nowhere today except on a few rocky islands off New Zealand's coast: Stephens, at the northern point of South Island; Brothers, in Cook

Strait; and Karewa, in the Bay of Plenty (map, page 438).

"Some have been in this zoo for donkeys' years and a little," said the caretaker.

"What do they eat?" I asked.

"Beets to live mostly on fresh air and a bit of water."

Also peculiar to New Zealand abode is the toheroa (*Amphidoma ventriosum*). This marine bivalve somewhat resembles a little quahog. On a sandy beach near Auckland friends showed me where and how to dig for the clams. Law forbids keeping any toheroa less than three inches long and limits one day's take to 20 per person or 50 per vehicle (page 431).

That evening I enjoyed a legitimate bowl of the most palatable and satisfying soup I ever tasted anywhere, including France.

So I added another item to the list of things worth seeing in this pocket world of wonder.

Like most of our Wonderland, however, New Zealand is one of real people. Here brown men and white have settled together. Among themselves they have wrought a way of life born of mutual respect and liking. And they are shaping a hopeful heritage for generations to come—an encouraging example for a troubled world.

Hays, Kansas, at the Nation's Heart

Places Where Indians, Comanching Sherlocks, and Buffalo Roamed
Now Shape an Empire of Wheat, Cattle, and Oil

By MARGARET M. DETWILER

With Illustrations by National Geographic Photographer John F. H. H. H.

OF the heart of the Nation, the wide plains of Kansas, lies just 75 miles southwest of the geographical center of the United States. Located at the heart of America, Hays is itself American to the core.

The little city, crisscrossing the shallow valley of Big Creek, is an island of trees and rooftops in a rolling sea of wheatland and cattle range. In summer the restless Great Plains wind ripples the encircling miles of grass and grain.

Hays bears a family resemblance to dozens of western towns. Mostly they are "look-alikes," with grain elevators, water towers, flour mills, and ruler-straight railroad tracks.

Yet, behind their neat but undistinguished exteriors, each place is unique. The touchstone to test the stuff they are made of is often—as with Hays—a leaning through the pages of their past, almost certain to be colorful in these longitudes of the United States.

Viewed down the long perspective of history, Hays and other west Kansas communities are indeed "Johnny come-latelies." Yet how much Kansas has achieved since the twilight of the pioneer era!

It was 1861 before Kansas gained statehood, and the Civil War's wounds were starting to heal before the first transcontinental railroad pushed steel across the lonely plains. No town in this part of the State is more than a hundred years old.

Bound for a New Home

When I learned that Hays was to be my new home, the prospect was unalluring. Washington, D. C., where we lived at the time, naturally was in the thick of events. Exchanging the Nation's Capital for what sounded like a prairie crossroads seemed like exile to a remote no man's land.

This impression shows that my knowledge of Kansas then was practically nil. In less than a year our little family was quite at home in the friendly city of Hays.

With my little girl I flew from the East as far as Salina, Kansas. In the small plane that took us on from Kansas City, we followed the Kansas, or Kaw, River for more than a hundred miles. We noted the thinning of the trees and the increasing distances between farmhouses, and felt a surge of excitement as

we crossed the threshold of the real story-book West.*

As we stepped out at Salina, we were struck—literally—by the wind, to me the outstanding feature of the Kansas plains.

At Salina my brother met us and we motored west the last hundred miles to Hays. My brother is a doctor; I went west to keep house for him.

We were pleasantly surprised to find the country not so flat as we had expected. In fact, there are some quite presentable hills.

The roads, however, generally following section lines, mostly run straight east and west or north and south. Farmhouse lights, which appear near at night, take a long time to reach. My little five-year-old, used to the more winding roads of the East, kept asking why there were no turns in the highway.

Ditches Serve as Flood Insurance

Having heard much of the rich Kansas wheatlands, I was depressed at first by the appearance of the farms, bare of trees and often with unpainted buildings. The countryside in brown winter garb somehow was not appealing.

Indeed, it was easy to see that times could be hard on the open plains, with little water and the persistent winds. Trees along the streams and dry creek beds we passed offered some relief.

Along the side roads huge ditches, twelve to fifteen feet wide and four or five deep, had been dug for drainage. Cactus, sage, and Russian thistle (a kind of tumbleweed) vied with the grasses to fill them up.

What could be the purpose, we wondered, of such broad ditches in so dry a land? Later we watched them prove their worth during heavy spring rains and floods (page 484). They also act as catchment ditches for snow blown off the roads by blizzards.

We passed a couple of Usage orange hedges, but for the most part yellow limestone fence posts held the barbed wire that kept the Hereford, Black Angus, and Galloway cattle in their dry pasture. Just beyond the fences the ground was plowed for several feet as a guard against the spread of prairie fires. Fields of

* See "Speaking of Kansas," by Frederick Smith, NATIONAL GEOGRAPHIC MAGAZINE, August, 1937.



Bucking, Bellowing Brahma Steer Tosses Law Rider at the Russell-Kansas Rodeo

The cowboy may hang on by one hand for a moment if he uses the other. He is a good rider, and he is a good horseman. He is a good horseman, and he is a good rider. He is a good horseman, and he is a good rider. He is a good horseman, and he is a good rider.

milk, a grain sorghum used for feed. It ripened to a coppery color, contrasting with the drab yellow of dried buttermilk.

We had been looking for western things, drove into one of the most gorgeous sunsets I have ever seen. As the sun set, the colors of the sky were a brilliant red, and the sun was a brilliant red. The sun was a brilliant red, and the sun was a brilliant red. The sun was a brilliant red, and the sun was a brilliant red.

I found myself wondering what stories these plains could tell. What was Kansas like in its days as the land "where the buffalo roamed"? Later, through old, old tales, with stories of old-time Kansas, I began to fill in this storied past.

We found traces of the old and new, set in the history of a country. It is a place of old and new, set in the history of a country. It is a place of old and new, set in the history of a country. It is a place of old and new, set in the history of a country.

It was called as a railroad town near old Fort Hays, named for Gen. Alexander Hays, killed in action in the Battle of the Wilderness. It was one of the first towns on the Spooky Hill Trail traffic from Indian attacks.

Gen. George A. Custer and his men, who arrived at Fort Hays in 1876, found the Indians. The Indians, who had been driven from their lands, putting through the hated battle of the Little Bighorn, where their whole economy depended.

The Comanches, Pawnees, Kaws, Cheyennes, and others, who had been driven from their lands, putting through the hated battle of the Little Bighorn, where their whole economy depended. The Comanches, Pawnees, Kaws, Cheyennes, and others, who had been driven from their lands, putting through the hated battle of the Little Bighorn, where their whole economy depended.

The first white men to arrive in the territory were the first white men to arrive in the territory. The first white men to arrive in the territory were the first white men to arrive in the territory. The first white men to arrive in the territory were the first white men to arrive in the territory.



Hays Cowboys, Bag and Battle, Need Fancy Boots for Redskins and "Guns" to Town"

When Kansas was first settled by Americans, the Indians were numerous and Sheriff's Wild Bill Hickok was killed by a Cheyenne. The first white settlers were hunters and trappers, and the Indians were the main source of furs and skins.

The present-day Kansas was a hunting ground of Indians, northward from Mexico to Texas, in their search for the Seven Cities of Gold. They didn't find the material riches of the Spanish mind, but they found a rich and beautiful land, and the Indians were the main source of furs and skins.

Aborigine Meets Parisian

The French explorer Etienne de Bourgmont came to the Smoky Hill River in 1764 to make a treaty with the Indians. He was the first white man to see the great river, and he was the first to see the great river.

On his return to France, de Bourgmont was with the eight braves and the daughter of a Missouri chief. He lived in Paris for a while, and he was the first to see the great river. He was the first to see the great river, and he was the first to see the great river.

The first passage of the Kansas-Nebraska Act, which created the Territory of Kansas, was in 1854.

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Outboard Racers Seem over a Lake Covering Parts Where the Buffalo Roamed

Editor Bill R. With his Lake

... ..

The

In 1859 the

... ..

... ..

Hardships Included Dried-apple Pies

Dried apples

... ..

Editor Horace Greeley made the trip to the West Coast in 1859. In Lawrenceville, Kan.

The *Democratic Platform*, of Liberty, Missouri, declared, "We are in favor of making Kansas a 'Slave State' if it should require half the citizens of Missouri, musket in hand, to emigrate there, and even sacrifice their lives in accomplishing so desirable an end."

At that time the entire white population of this highly prized Territory, extending from Missouri to the Rockies, consisted of a few hundred soldiers at the forts and about an equal number of civilians living at the Indian missions, stage stations, and trading posts.

With the influx of settlers came the "Bleeding Kansas" days, when slave and free states struggled to control the government. Violence broke out. The trouble centered in the more quickly populated eastern part of the Territory, around Lawrence. In the thick of the bloodshed was John Brown, later hanged in West Virginia for seizing the armory at Harper's Ferry.

Frontier life was at best a challenging adventure, but in Kansas it was extremely difficult. The border warfare, droughts, floods, prairie fires, blizzards, grasshoppers, dust storms, and the ever-present threat of Indian attack discouraged all but the hardiest.

Since there was little wood in the central and western parts of the State log cabins were not common. Sod houses, dugouts, shake houses of shingle-like slabs, and hay tents were the settlers' early homes.

Corn was the staple crop and a main article of diet, served as hominy, corn-meal mush, corn bread, and in a variety of other ways. Sometimes it was dished up with a little molasses or sugar, or pease, or pork, or from sorghum and boiling it down.

How Pioneers Conducted "Coffee"

Matches, salt, and coffee were rare. Ingenuous pioneers devised a substitute for coffee, however, made of ground sun-dried sweet potatoes and okra, and wheat browned over a fire in the family skillet. Buffalo chips (droppings) were the regular fuel.

Pioneers mostly made their own cloth and thread. Needles were scarce, expensive, and not standardized. Calico could be purchased for forty or fifty cents a yard.

Settlers banded together to open schools, or they were started by town subscription. The furnishings were most primitive; the first textbooks were whatever reading matter the parents happened to have.

New military posts had been established in the sixties for protection of the trails, and, later, of railroad workers and settlers. Old Fort Hays was one of these. It was founded in 1865 as Fort Fletcher, on the banks of Big Creek, 14 miles southeast of the present city.

At that time the fort was in the middle of

a vast, uninhabited, grassy sea. Uninhabited by white people, that is. Indians roamed the plains following buffalo migrations.

The name of the fort was changed to Hays in 1866. After the camp was flooded out early in 1867, several soldiers losing their lives, it was moved to higher ground just south of the location chosen for Hays City a little later the same year.

As railroads pushed westward, towns were laid out, and one succeeded another as "the tough town at the end of the railroad." While Ellsworth held this dubious honor, the grading gangs were working toward Fort Hays. They were moving deeper into Indian country and the tribes' resentment swelled.

Decline and Fall of a Kansas Rome

William Rose and Buffalo Bill Cody founded the town of Rome northwest of Fort Hays, on Big Creek, in 1867. Within a month it had a population of five hundred, rapidly increasing to two thousand. Flimsy shacks and false fronts shot up overnight with the influx of hundreds of railroad workers (page 481).

A month later a railroad representative arrived and tried to buy out Cody. He refused; so the railroad located its own town, Hays City, a mile east of Rome. Relations between the two towns were somewhat less than cordial.

The Romans hoped that water could be located on the Hays City site. The railroad, in its turn, had the grading raised several feet as it passed Rome so that the town was cut off from the fort. It was jokingly called the "waded city."

After many failures, and many jokes from the rival town, the railroad's engineers at last struck water. Hays was soon flourishing with a few tents and sod shanties, one grocery store, a clothing shop, three dance halls, and 22 saloons (page 476).

Within a short time those inhabitants of Rome who had not already moved to Hays were nearly wiped out by a cholera epidemic.

General Custer made Fort Hays his headquarters during several Indian campaigns. Mrs. Custer lived at the fort and wrote *Tramping on the Plains*, a fascinating account of her experiences and the life around her.

Indians were killing railroad workers and homesteaders, and attacking the stage stations. Several stage stations on the Smoky Hill route were wiped out and a few Ellis County people were scalped. The fort protected Hays from actual attack. However, the Indians were everywhere. There were plenty of scares, and the soldiers fought several battles.

Indian tribes occasionally attacked each other. One day, almost within sight of the fort, a fierce battle took place between Kaws and Cheyennes. The latter had killed a lone



Stamps and Plates
Capt From
Old Field Waste

When the war broke
out in 1914, the
country was in a
state of confusion
and the people were
in a state of
panic. The
government
was in a
state of
panic.

The
government
was in a
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was in a
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The
government
was in a
state of
panic.





Beef Cattle Graze Land Where Giant Reptiles Land Down Their Bones in a Shallow Sea

On the coast of the Gulf of Mexico, where the land is very low and the water is very shallow, the bones of giant reptiles are found. The bones are of the size of a man's leg and are of the shape of a man's leg. The bones are of the size of a man's leg and are of the shape of a man's leg. The bones are of the size of a man's leg and are of the shape of a man's leg.



6 Rexach Celebrates Its Beginnings by Reverting to Old-time Dress

There is no more the fashion of the modern world of yesterday. The people of Rexach are now dressed in the old-time dress. The fashion of the world is now the fashion of the past. The people of Rexach are now dressed in the old-time dress. The fashion of the world is now the fashion of the past.

7 Weeks of Beard Culture Bring Back the Razorsby Days of Old

People are now wearing the razors of the old world. The people of Rexach are now dressed in the old-time dress. The fashion of the world is now the fashion of the past. The people of Rexach are now dressed in the old-time dress. The fashion of the world is now the fashion of the past.





Parading Russes Celebrates Ten Years of Growth. A Parade Down Main Street Shows Its Five-day Progress
The parade is a grand affair, with a large float carrying the Mayor and his family, and a band of musicians in red uniforms. The float is decorated with green and gold accents, and the band is marching in front of it. The crowd of spectators is gathered on the sidewalk and street, and the buildings on either side of the street are visible in the background.



Loving Hearts and Strong Harky Built Victoria's St. Fidelis Church

When you have been to the church and seen the interior of the church, you will be struck by the beauty of the architecture and the love and devotion of the people who have built it.

Kaw, precipitating a four-hour fight. The Kaws took four scalps and several ponies in revenge. Soldiers at the fort remained cool while Indian killed Indian.

Once a small party of buffalo hunters was surprised by a band of Chyennes along the Saline River, north of Hays. Since the Indians asked for food and the hunters had little to give, red men and white returned together to the city.

Indians Came, Saw—and Ate

Townpeople came out to meet the strange cavalcade. Officers rode over from the fort for a council. Jim Hall, the postmaster acted as interpreter, and all joined in smoking a peace pipe. The Indians' pipe had a three-foot stem decorated with a painted horsehair tassel and trimmed with brass.

After the usual speeches, in which the Indians protested in vain the white man's perjury, the meeting adjourned for refreshment. The Indians had fierce appetites. The chief, White Wolf, consumed three hearty meals within a couple of hours.

The tribesmen then entertained the townspeople with pony races on the main street, and with all-too-convincing demonstrations of their skill with bow and arrow. The citizens of Hays breathed a sigh of relief when their guests finally galloped off.

Early Hays reflected the violence and restlessness of the frontier, always ripe for mischief. The soldiers had no USOs in those days, and Hays had its share of gamblers and questionable characters to prey upon the lonely men.

Besides railroad workers, there were hundreds of midwhackers coming in with supply trains for the troops. Some of these trains had as many as 500 wagons, strung out for miles along the trail.

The Government built large warehouses to store the supplies, which arrived by rail when the track was at last completed to Hays. From Hays supplies and equipment were distributed south to Fort Dodge and Fort Larned by wagon until the Santa Fe Railroad went through to Dodge City. Often as many as 500 Government and Mexican teamsters crowded into Hays at one time.

The children delighted in the colorfully clad Mexican traders who came up the Fort Dodge trail. Their trains consisted of large, canvas-covered wagons, each pulled by eight or ten yoke of long-horned oxen and with two trader wagons chained behind.

Equally exciting was the arrival and departure of the heavily guarded stagecoaches. They were so precisely scheduled that many citizens who had no other means relied on them to tell the time.

When Hays was founded, the stage route was shifted to serve the new city. A few of the old stage stations and the ruins of others may still be seen. In several places, never turned by the plow, tracks of the wagon wheels still are imprinted.

While Hays was at tracks' end, westbound trains arrived daily, except Sunday, at about noon. They pulled out for the East at 1 p.m. The cars rolled only by day for fear of Indian attacks. Ellsworth was the overnight stop. Winter blizzards frequently locked trains at cuts filled with snow.

Matt Clarkson, buffalo hunter, reports in his memoirs that the people of Hays thought nothing of finding one or two dead men on the streets nearly every morning. They were buried in Hot Hill cemetery in the clothes they died in. Most of the bodies were just shoved into dry-goods boxes and thinly covered with earth.

In the summer of 1869 Wild Bill Hickok was hired as marshal of Hays City, succeeding three peace officers who had died prematurely—of "lead poisoning"—or been frightened away. By the end of the year he had struck courageously for law and order, having killed several offenders and driven out many undesirable.

Old-timers like to reminisce about Wild Bill's exploits. The story is told that once he exhibited his marksmanship by shooting at a wooden post. After ten shots, inspection of the target revealed only one hole in the post. Onlookers were a trifle skeptical until they dug out the hole and found ten bullets embedded in it.

Convictions Few in Frontier Courts

Under the best circumstances, a conscientious officer of the law was at a disadvantage. It was hard to get a conviction in court. Even when a man was brought to justice after a long cross-country chase at the risk of the sheriff's life, the court, more often than not, let the offender go free.

Mike Joyce, a lawyer in Hays, claimed to be the only judge in the western part of the State. He boasted there was no court higher than his. His laxity became notorious. Once a prisoner pleaded guilty to killing a man, Joyce shouted, "Shut your damned mouth. Case dismissed for lack of evidence."

The following is an entry in the Ellis County commissioners' proceedings in 1876: "The varments were so bad it wasn't healthy for a man to sleep in jail. For that reason the prisoner was dismissed."

Buffalo Bill Cody proved his right to his title by winning a buffalo-hunting contest sponsored by the Kansas Pacific Railroad.

At the age of 11 young Cody had been left



Lowtown, N.Y., about 1885. Looked like the Jerry-built Scum of a Modern Western Film

The building shown in the photograph is a large, multi-story industrial structure, likely a factory or warehouse. It features a prominent central tower and numerous windows, suggesting a complex interior layout. The building is situated on a flat, open area, possibly a riverbank or a large lot. The architecture is industrial, with multiple levels of windows and a complex roofline. The photograph is a black and white image, providing a historical perspective of the building's appearance.

A Limestone Quarry Among the Weathered Remnants of a Siliceous Rock. The Spreading Flood Seems Poured in Strike

The weathered limestone is a fine example of the weathering of a siliceous rock. The weathered limestone is a fine example of the weathering of a siliceous rock. The weathered limestone is a fine example of the weathering of a siliceous rock.





The Comic-book Set Gets Together at the Nation's Hub

Readers of the comic book "The Nation's Hub" will find a collection of the most interesting and amusing stories of the nation's hub. The book is now on sale at a special price of 50 cents. It is a must for all who love to read.

head of the family he decided to let father Al Hays assume Pony Express rule. He made one of the swiftest long rides in history, 52 miles in 21 hours and 40 minutes (June 1861).

The Hays young Pony was picked up by deer meat, until Wild Bill Hickok was a liking to the youngster. No one party early started a tick trouble with Wild Bill.

Buffalo Herds by the Square Mile

Buffalo Bill got a job providing meat for the railroad workers at the fabulous salary of \$50 a month. He was to provide 12 carcasses a day for 400 workers. He kept the job for 18 months, during that time he killed 4,280 buffaloes. The carcasses mounted many of the skulls for display in railway offices across the country.

Early travelers by stagecoach and by train recorded their amazement at the tremendous

herds of animals that roamed the plains.

Of all the big animals that have lived upon the earth, perhaps no other species has ever diminished so tremendously in the case of the American bison. In the annual report of the Smithsonian Institution for 1881.

It would have been as easy to count the leaves in a forest as to calculate the number of buffaloes living there. Even after firing the arrows at the species previous to 1870.

C. A. Kennard E. Dodge recorded his first hunting in 1861 across the head of Kansas, in a flat wash, when 25,000 of the four-legged animals roamed through the grassy lands. It covered about 50 square miles. Yet, in the next 18 years, the slaughter was so great that at the end of that period the appearance of a wild buffalo was worthy of special mention by the Associated Press.

It is so wonderful that the Indians sought so carefully for their right to the bison meat. They were dependent upon the animals for virtually their whole livelihood. Their food was bison, bison

meat. From the bison skins and bones they made their shelter, their clothing and big robes and wearing robes, their bow strings, arrows, gun ornaments. Buffalo chips were the fuel.

Before it became famous as a "cow town," Dodge City, 65 miles south-west of Hays, was a center for collection of buffalo robes and bones for shipment out. The robes were used as warm blankets. Only the horns and antlers were taken for meat. The rest was left to rot in the sun.

Travelers protected their marksmanship on the plains and the warriors. Later travelers described the scene filled with carcasses. Breezes blew the dust of decaying flesh.

There was plenty of other game as he had, but none so useful as the buffalo. General order wrote of elk, wolves, antelope, deer, and moose. Others mentioned a wild cat.

keys, mountain lions, and coyotes, as well as prairie dogs and rattlesnakes.

Hunters cut out the buffaloes' tongues to keep track of the number killed. "Brick" Bond held the record with more than 6,000 in 60 days. In the last two months of 1874, he shot more than a hundred a day and employed five skinners.

How Indian Centaurs Raided Herds

Old bulls guarded the perimeter of the herds. In one method of hunting, the Indians would shoot a few arrows to make an entry on the herd. To keep the rest of the herd from joining, they picked off the young calves and the bulls.

Their ammunition exhausted, the Indian hunters would work their way out of the herd, leaving the carcasses for the squaws to skin and cut up. Experts at this, their women soon had the skins pegged to the ground to dry. Some of the meat was smoked and the rest pulled off in thin strips and dried. This "jerked" meat kept indefinitely. Every particle of the beast was saved for some purpose.

One account of an Indian hunt with bow and arrow says: "Today's Wild West show could not begin to after the wild excitement that prevailed for the next half-hour. It was simply glorious. . . . It was a wonderful sight to see the Indians stripped to the waist and riding like centaurs, guiding their horses by their knees and the bending of their bodies, allowing free action for the arms to use the bow. They would shoot their arrows with such force that, missing a bone, it would go entirely through the body."*

The *Railway Advocate*, the first newspaper printed in Hays, contains an item in its maiden issue, November 9, 1867, mentioning buffalo meat as being a drag on the market. Wolf pelts were selling for \$1.25 and \$1.50, and coyote pelts for 75 cents. At the same time, the Big Creek Land Company was offering land around Hays at \$1.50 to \$2 an acre.

In 1872 a wealthy Scot named George Grant, traveling east over the newly completed railroad, conceived the idea of purchasing a large tract for British settlement. The railroads were eager to sell land to create business. They gladly sold Grant some 69,000 acres ten miles east of Hays for about 85 cents an acre. Thus he became the district's largest landowner.

Grant's idea was to give younger sons of good British families, usually expected to go into the military services or the ministry, a chance to establish themselves on their own land. The adventure appealed to many youths.

The new colony was named Victoria, after Britain's queen. About 60 persons came over the first year. The original group landed in

New Orleans in the spring of 1873, bringing purchased sheep and the first Aberdeen-Angus cattle introduced to this country.

An architect made the long journey from London to lay out the town of Victoria. Streets were to be 100 feet wide and alleys 20 feet. Yellow limestone was plentiful and soon several fine homes were finished. Grant's own villa resembled an English manor house, complete with walnut staircase, music room, and study.

The British colonists and the garrison of Fort Hays engaged in mutual entertainment. The English had brought fine silver and china and lived in style. They organized a cricket club, a race track, weekly dances, and a hunt club. It was a somewhat startling sight, in that frontier land, to see the aristocratic newcomers galloping over the countryside in their park coats.

Most of the young men, however, were not very serious about farming and cattle raising. Many of them received remittances from their families and soon came to be known in Hays as "remittance men."

Grant brought in rare fine stock from Europe and Canada, and took many prizes. His ambition was to have the largest stock farm in the country. Trouble plagued the colonists, however—blizzards, a prairie fire, and a plague of grasshoppers.

The colony reached its peak of about 500 members between 1876 and 1878.

Germans from Russia Arrive

The railroad, meanwhile, had sold the land adjoining Grant's colony to immigrants from Russia. They were Germans who had gone to farm the Caraline and Volga River lands at the invitation of Catherine the Great. There they were ground down as peasants and preyed upon by Kieghiz hordes that swept over the land, pillaging and killing.

When they reached Kansas, therefore, these immigrants were a suspicious people who kept to themselves and had difficulty adjusting to their new surroundings. They dressed and acted differently from other settlers.

Lacking any prepared residence, the Volga Germans, as they call themselves to this day, slept in the open until their houses were built. They had large families, and all were used to hard work. Their first dwellings were made of sod, laid like bricks. The men made crude furniture from scraps of wood, their stoves were of mud bricks baked in the sun.

The industriousness of the Volga Germans must have made the aging Grant realize the futility of his dreams for his sport-loving colony. About two years after the coming of

* *Prairie Trails & Cow Towns*, by Elwood Benjamin Streeter, Chapman & Gilman, Inc., Boston, 1904.

the Germans, he died. With his death the Victoria colony began to dwindle away. The drought of 1880 hastened the disintegration.

Some of the colonists moved their businesses to Hays or to other parts of the country. Others returned to England. Within a few years the Germans were left in control at Victoria. Here, at least, the meek inherited the earth.

A half-mile from the British settlement, the Volga Germans had established the little town of Herzog, part of present-day Victoria. Herzog was one of five German settlements in Ellis County. The original Volga German colony was joined by immigrants direct from Germany and by other Germans who had settled temporarily in Kentucky and Ohio.

When Victoria had outgrown three adobe churches, the present "Cathedral of the Plains" was begun. When I first saw this impressive structure, I could hardly believe my eyes. It is a big building, 220 feet long and 73 wide, with twin towers visible for miles across the plains (page 476). I could not imagine how so small a town could build so large and beautiful a church.

Cathedral a Labor of Love

The Cathedral of the Plains, erected mostly by hand labor, took three years to build. Each parishioner over 12 was assessed \$45, no small sum to those struggling people. The pastor, Father Jerome Muller, also assessed each communicant six loads of stone, to be hauled in by the parishioner to the site.

The building, officially St. Fidelis Church, is beautifully decorated within. The stained-glass windows from Munich are among the finest in the country. Hays granite to mold and support the stone arches (page 474).

For all their hard work, the Volga Germans had a good time. They loved music and often could muster in one family enough musical instruments for a small band. They were frequently invited to play for the British, and always had a music festival on their own feast days. Weddings were especially gay.

The evening before a wedding was known as *Polterabend* (racket eve) and was as lively as the name implies. Early the following morning the bride went to the home of the groom, taking only what she wore. The groom and his mother had previously selected all her clothes; the groom providing the dowry. A man had, in a way, to buy his bride.

A tremendous feast at the home of the groom followed the wedding ceremony. A whole hog or quarter of beef often barely sufficed for the many guests. There was, of course, plenty of liquid refreshment in the form of a drink, made from rye, which was called *quast*.

After the feasting, the dancing began. Two violins and a lubber, or perhaps a zither, provided the music. It was each man's pleasure, or duty, to dance with the bride, and while doing so custom demanded that he pin a gift to her dress. Dancing and feasting went on for three days.

The Germans gave their word for wedding, *Hochzeit*, to the exaggerated, hopping waltz they danced and by extension, to the festivities as a whole.

The Volga Germans of Victoria still cling to many of these old customs, but nowadays the celebrations last only one day.

Hard Wheat Proves a Godsend

Another group of German settlers from Russia, the Mennonites, brought with them a hard winter wheat, called Turkey Red. It was the first hard winter wheat grown in the State.

American farmers, sowing soft wheats in Kansas, were not having much success. Winter wheat soon led in production, since it was hardy enough to survive cold and drought.

Millers found the hard wheat more difficult to grind, but a few who tried it discovered, in compensation, that it gave much more flour to the bushel. Unwittingly, the new grinding methods multiplied.

There still remained, however, a long struggle to sell the new flour to housewives. Other types of hard wheat were tried. Mark Carleton, of the United States Department of Agriculture, pioneered in discovering the hardiest strains. He visited Russia in 1898 and 1900 to find and bring back new varieties.*

Today the wheat is sown in the fall. Cattle are allowed to graze on it during the fall and winter, when it is a few inches tall. In the spring it blankets the countryside with green (page 489).

Then the wheat turns to gold, and in June the huge harvesting machines begin their work. Gradually they move northward, harvesting from one county to another. Around Hays, farmers usually expect to finish the wheat harvest by the Fourth of July.

For the rest of the summer, fields not planted to feed lie fallow to store moisture. Acres of yellow sweet clover and purple alfalfa lie between the green fields of rye and kaffir, carpeting the earth with glowing color.

Spring comes late to Kansas, or so it seemed to me after a cold, dry winter. I longed for the woodland wildflowers of the East. When spring did arrive, however, I found the roadsides a mass of bloom with many unfamiliar kinds of wildflowers (page 488).

* See "Mapping for Nation's Breadbasket," by Frederick Smith, *National Geographic Magazine*, June, 1948.

ORIG. TOWNSITE OF ROME

EST. APRIL, 1867

FOUNDER MAYOR

Wm F. CODY
Buffalo Bill



182

Few People Know that Buffalo Bill, the Successful Hunter, Failed as a Town Founder

William F. Cody, who founded Rome, Kan., in 1867, is a man who has been known for his success as a hunter and writer. His failure as a town founder has been a subject of interest to many people.

The air of Rome blossoms of yucca is covered the air with cottonwood trees, filling the air with snowflake. The air had the impression of looking as if some great map had been shaken over it. A Baltimore circle family built its nest near our window, and meadow larks filled the air with song.

Finally the rains came, not in gentle spring showers, but in Nazi rain storms. The rain poured down and the wind blew. The wet rain hit the house, through the open doors and windows. We had been waiting for rain to settle the dust, but this was too much of a good thing.

New Dams to Check Floods

Two floods struck Hays within a month. The thunder and lightning were terrific. Many other Kansas towns suffered also from the rapid rising of streams (page 483).

The sight of Mrs. Custer in her tent those many years ago. It had blown down. That her tent was blown down in such a storm, and the sight of Big Creek flooded and some soldiers had been drowned on a flood made island for several hours.

Big Creek runs into the Smoky Hill River,

which rises in eastern Colorado and flows eastward, meeting the Republican River at Junction City to form the Kaw (Kansas).

Twenty miles southwest of Hays, the Cedar Bluff Dam on the Smoky Hill is a part of the Missouri River Basin Project (page 484). This, with the Kanopeis Dam to the east, will provide a large irrigated area in central Kansas (page 485).

The dam at Cedar Bluff is earth-filled. The foundation was sunk in the solid shale of the preglacial river bed, some 68 feet below the present level. The dam rises 202 feet above its deepest foundation and stretches 12,500 feet in length. Its vast slopes are faced with rock.

The high bluff covered with cedars that names the dam was noted as a landmark by Lt. J. R. Fitch, who surveyed the Smoky Hill trail in 1865.

In the Junction City Union, September 9, 1865, Fitch described another famous landmark, 50 miles west of Hays. "Camped two days to rest," he said. "The scenery here is

... The Outlaw Moon is seen in the distance. The National Geographic Magazine, November, 1905.

really grand. One mile south is a lofty calcareous limestone bluff, having the appearance of an old English castle with pillars and avenues traversing it in every direction. We named it 'Castle Rock.' "

Castle Rock is still a grand sight, 87 years later (page 477). It rises from plains empty for miles around, except for a scattering of cattle. As we drove there over the dusty roads, flocks of horned larks flew up and away with a flash of white underfeathers. Pheasants scurried along the fences. Approaching the castle, we flashed a great bald eagle from our path.

Castle Rock itself, part of the Upper Cretaceous formation of central and western Kansas, presents endless interest to geologists. Many prehistoric animals are at home on its face. This country at one time was the bottom of a vast inland sea. Rich finds of fossil fish and other interesting creatures give promise of numerous further discoveries (page 470).

Last spring the geologists at Fort Hays Kansas State College dug out the fossilized head of a giant fish at Castle Rock. In Hays, the college has a fascinating museum housing George F. Sternberg's wonderful fossil collection, as well as many mementos of early Kansas days.

Hays a Frontier Town Grown Up

After Fort Hays was abandoned as a military post in 1889, its 7,000-acre site was ceded in 1900 to the State and divided between a park, a State normal school, and a State agricultural experiment station. Instruction began at Fort Hays Kansas State College in 1902. It is now a liberal arts college with an enrollment of about 1,100 (pages 467 and 469).

The buildings are all of native yellow limestone, which is soft when quarried but hardens on exposure (page 490). The campus is beautifully planted with trees, and its five ponds lie cool and inviting. Sheridan Coliseum is one of the State's largest auditoriums.

The Fort Hays Agricultural Experiment Station works in cooperation with the United States Department of Agriculture, pursuing studies of soils, fertilizers, and irrigation, forage crops, crop diseases, and noxious weeds. The station also carries on cattle, horticultural, and feed researches. It produces and distributes large quantities of seed, trees, and shrubs adapted to this area.

Ellis County is a large oil producer. The pumps work in the fields side by side with windmills that lift water for grazing cattle. Oil was discovered in this district in 1923. Now there are wells in almost every direction.

To the north, in the Saline River breaks well towers seem almost as thick as trees.

Thousands of underground acres are being tapped. Great black pools of waste appear. When periodically burned off, they emit huge clouds of heavy black smoke, visible for miles (page 468).

Hays is a center for this local oil industry. Ellis County now has more than fifty producing pools.

From modest beginnings, Hays has grown to be the county seat, with a population of about 8,500. Of a number of small industries, the largest is a flour mill. The Hays station of the Central Kansas Power Company, using Kansas' abundant natural gas for fuel, serves many towns in the northwestern part of the State.

The town is proud of its fine churches and two well-equipped hospitals. People come to Hays for medical attention from all parts of northwest Kansas.

The German element of the population now seems predominant, although it is gradually being assimilated. These people have done well and are a credit to our country. They brought up large families in one- or two-room houses, worked tirelessly, and scraped to make ends meet.

The children walked miles to small country schools. Now their children and grandchildren own many of the leading businesses in Hays, as well as much wheat and oil land.

Of all the larger animals, the coyotes alone have held their own. A nuisance to farmers, coyotes carry a price on their heads. Hunters go out by car and plane during the winter and may kill forty or fifty a day in a single roundup.

Land of Space and Optimism

The people who live on these plains are of necessity hardy, long-suffering, and optimistic. Loving the wide expanses and far horizons, they have learned to take the long view of life.

The beauty of the prairie grows on all who live there. A native son, Floyd Benjamin Streeter, historian at Fort Hays State, has described it most fittingly in his book on the Kansas River country, *The Area*:

"It is on the western plains that the most haunting beauty is found. These plains are a world of pastels where skies are not just blue but azure, where clouds are never white or gray but tinted masses, where thunder and lightning are not just thunder and lightning but majestic battles of the elements. In April, the plains are a jade world; in June, a pale-green world; in August, a seared world; in autumn, a rose world."

If Kansas is no longer a "home where the buffalo roam," it still is a land "where the skies are not cloudy all day."



Boy Scouts Collected Wastepaper to Pay for Hayn's Statue of Liberty

The boys of the New York City Scout Council, under the leadership of Scoutmaster Hayn, have been collecting wastepaper to raise money for the purchase of a statue of Liberty for the city of New York.



"I am proud to be the story of Water in America. The Family Food System has been a part of my life."

$$\begin{aligned} \|f\|_{\infty} &= \sup_{x \in \mathbb{R}^n} |f(x)| = \sup_{x \in \mathbb{R}^n} \left| \int_{\mathbb{R}^n} f(y) dy \right| \leq \int_{\mathbb{R}^n} |f(y)| dy = \|f\|_1 \\ \|f\|_1 &= \int_{\mathbb{R}^n} |f(x)| dx = \int_{\mathbb{R}^n} \left| \int_{\mathbb{R}^n} f(y) dy \right| dx \leq \int_{\mathbb{R}^n} \int_{\mathbb{R}^n} |f(y)| dy dx = \int_{\mathbb{R}^n} |f(y)| dy = \|f\|_1 \end{aligned}$$





JEFFREY HAYES
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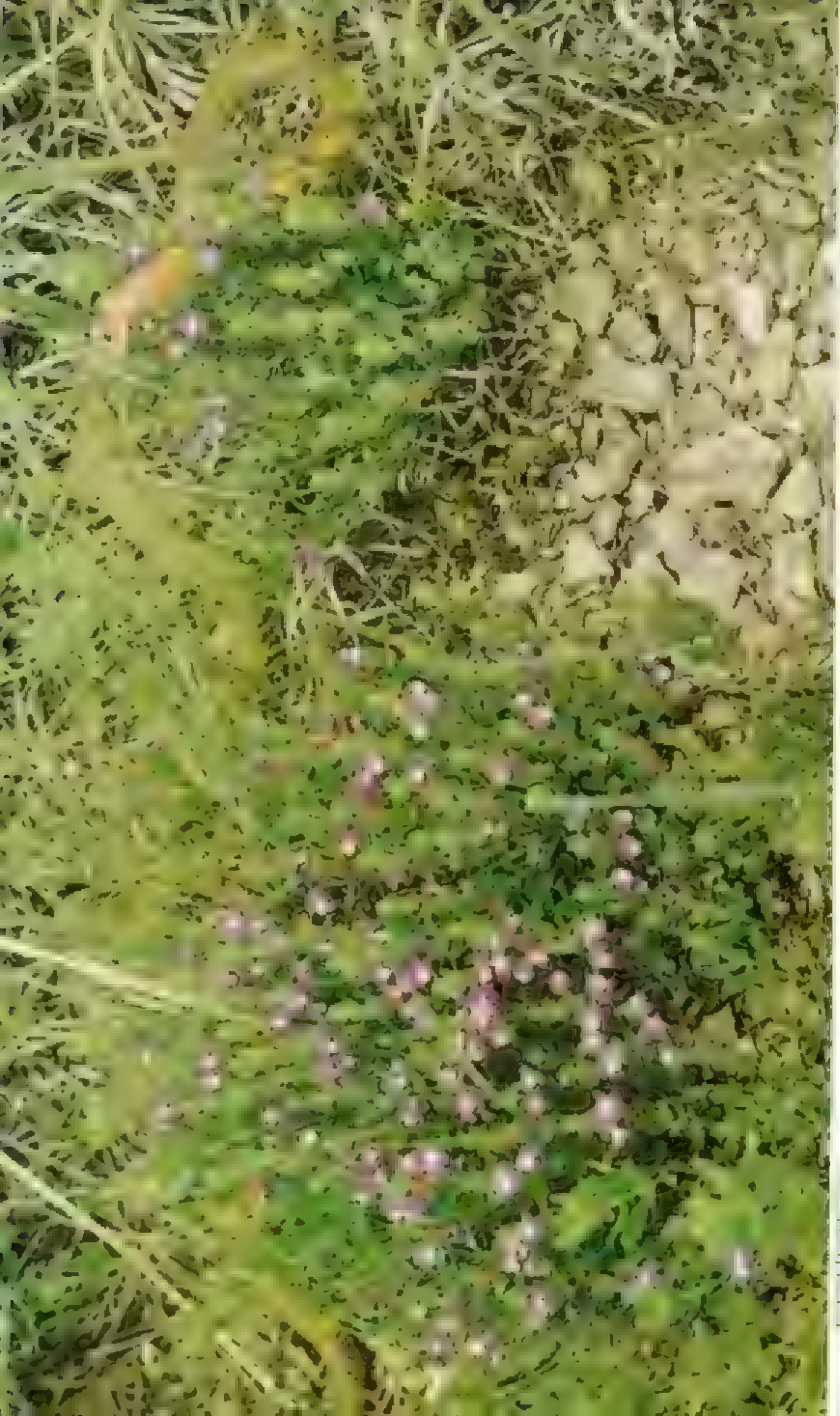
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1. The first step is to identify the problem or question that needs to be answered. This involves understanding the context and the specific requirements of the task.

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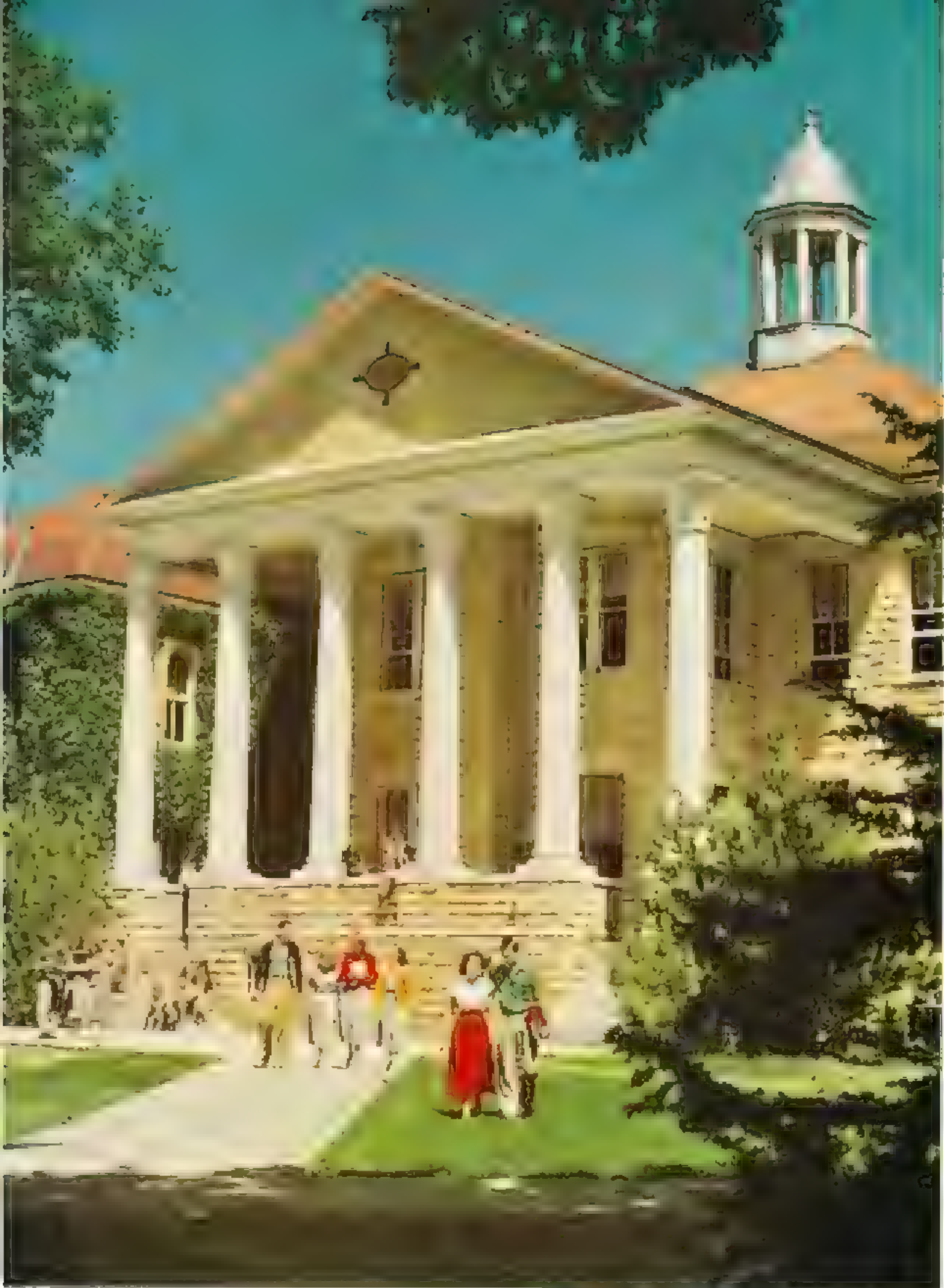
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What Does Green
mean for the
Future?

It is not only the
color of the grass
that we are talking
about. It is the
color of the sky, the
color of the water,
the color of the soil.
It is the color of the
air that we breathe,
the color of the food
that we eat. It is the
color of the clothes
that we wear, the
color of the houses
that we live in. It is
the color of the cars
that we drive, the
color of the planes
that we fly. It is the
color of the ships
that we sail, the
color of the boats
that we row. It is the
color of the trees
that we plant, the
color of the flowers
that we grow. It is
the color of the birds
that we see, the
color of the fish that
we catch. It is the
color of the stars
that we see at night,
the color of the sun
that we see in the
day. It is the color
of the world that
we live in. It is the
color of the future
that we are trying
to create.

It is the color of
the future that we
are trying to create.





Preker Hall's Soft Yellow Glow Comes From Hay's Native Timber
 The old building is made of the same material as the old building. The old building is made of the same material as the old building. The old building is made of the same material as the old building.

The Fur Seal Herd Comes of Age

Every Year a Million Mighty Swimmers and Half a Million Young Bring Drama to the Lonely Pribilofs

By VICTOR B. SCHEFFER AND KARL W. KENYON

Birds, Fish and Wildlife Service U. S. Department of the Interior

FROM the crest of Hatchinson Hill, on St. Paul Island and in the Pribilof Sea, we could see spread before us the largest breeding colony of fur seals in existence and, incidentally, the greatest assemblage of wild animals to be seen in such a limited area from any one point in the world.

Thousands of dark, moving bodies all but covered the semicircular tale of seal breeding beach bordering Northeast Point. They numbered at least 100,000, though the view encompassed only two of 21 named breeding grounds, or rookeries.

In the light of our population studies to date, we estimate that the Pribilof herd numbers about one and a half million seals. Its size now remains generally constant, and each year scientifically harvested furs yield the United States Government more than one-eighth the sum paid for all Alaska.

Saved by International Action

As we looked out over the vast swarm of seals and listened to the chorus of bellowing and bleating carried aloft on the fresh sea breeze, we found it difficult to believe that forty years ago their ancestors wavered at the brink of extermination.

In this magazine in 1911 the United States Deputy Commissioner of Fisheries announced the end of an old order and the beginning of a new.* No longer would the sealing schooners of the North Pacific nations be permitted to sail on their wasteful voyages of slaughter. No longer would men kill seals indiscriminately on the open sea, where many animals that they shot were never recovered.

The days of which Jack London wrote in *The Sea-Wolf* were ended. Large-scale pelagic sealing, which had reduced the seal herd from millions to fewer than 150,000, was a thing of the past. A new era in the wise use of a great natural resource had begun.

The immense gathering of seals we now beheld was a living monument to the foresight of the top-hatted envoys of Japan, Russia, Great Britain (representing Canada) and the United States, who, on July 7, 1911, gathered in Washington to sign the treaty that gave the remnant of the Pribilof seal herd a new lease on life. Perhaps to Rudyard Kipling's charming story *The White Seal*, in *The Jungle Book*, and to David Starr Jordan's *Alaska* may be attributed a good share of the public senti-

ment that gave impetus to this decisive move.

At first glance, the animals spread before us appeared to be in wild confusion. Big bull seals, 2,000 to 3,000 pounds, were roaring and fighting. Their smaller mates, weighing only 60 to 100 pounds, seemed to be moving aimlessly, and little black pups were crawling everywhere (page 500).

Bulls Hold Harems by Force

Yet, when we limited our field of observation to a small area, a fundamental pattern emerged. Each bull held sway over a small patch of ground. He allowed no other bull to trespass on his chosen territory, and any cow that crossed the boundary became part of his harem, his to have and to hold whether she liked it or not. Here she must remain, unless stolen by a neighboring bull, until her pup was born and until she was bred anew.

The fur seals of the North Pacific are known to science as *Callorhinus ursinus*, which, translated freely, means "bearlike with beautiful snout." They are distant relatives of the dog, cat, and bear, and close kin of the California sea lion, familiar to most of us as the trained seal of the circus.

Seals are warm-blooded, with lungs and milk glands. They breed in summer on the islands of Pribilof (United States), Midway and Bering, of Russia's Commander Islands (Komandorskie Ostrova), and Robben (Thule). Robben Island, in the Sea of Okhotsk and less than half a mile long, was controlled by Japan from 1905 to 1945, when Soviet Russia recovered it (map, page 496).

Seals from all the islands mingle to some extent during their winter travels at sea, but, through some sixth sense not yet understood by man, they sort themselves into clans and return to the same breeding grounds each summer (page 499).

Before the mass of snow drifts have melted along the basaltic beaches and hill sides in early June, the first fat and belligerent bulls appear on the Pribilof shores to proclaim themselves "beachmasters." Each establishes himself on a small station about twenty to forty feet in diameter (page 499).

By mid-June, when the cows begin to arrive, the breeding-ground pattern is well estab-

* See "Making the Fur Seal Abundant" by Hugh M. Smith, *NATIONAL GEOGRAPHIC MAGAZINE*, December, 1911.



Seals, Dripping Fur Seal Rest on a Rock and Sniff the Doring Breeze

From the surfy, misty waves off the female returns in mid-June and July to the Pribilof Islands. The males, which are much larger and heavier than the females, are much more numerous. They are much more numerous than the females, and are much more numerous than the females.

and the male seals are much larger than the female seals. The male seals are much larger than the female seals.

Human hunters are forced to retreat before the power of the bulls. Only the seals are warned of the hunters' approach by the seals' barking and the seals' barking.

Each bull seal weighs over 2,000 pounds and is much larger than the female seals. The male seals are much larger than the female seals.

Burly "Beachmaster" Touches No Food

From the time a bull seal returns to his post through the water, the beachmaster touches no food. The beachmaster touches no food.

And as observers have wondered how long a bull seal may fast. However, it

is not the case. As the seals are much larger than the female seals, the male seals are much larger than the female seals.

but in the case of the male seals, the male seals are much larger than the female seals. The male seals are much larger than the female seals.

For many years, in mid-July, the Government manager of the Pribilof Islands has conducted a census of the harem bulls. This is done because the bulls are so large that they stand out clearly above their smaller mates and because they hold fast to their



Hounds in Parks, the Model Bulldogs a Lustrous Serpentine Coat

[illegible]

Lower readings for two or three months. The ratio, versus gives us a good indication of the size of the economy and the leading portion of the year.

The nest record was the evidence of parental investment has disappeared between 1970 and 1980. This can be explained that we could not find the birds in the breeding season, we found them only in the winter and summer fall and winter all birds.

Like the old one, now is well adapted to the strong and the weak, and is not more useful to the one than the other. It is not only a good thing, but a good thing to have. And it is provided for us, with the same facilities as everything else. Almost as good as the old one is, but she will be out of the way, and the new one will be the best of the new.

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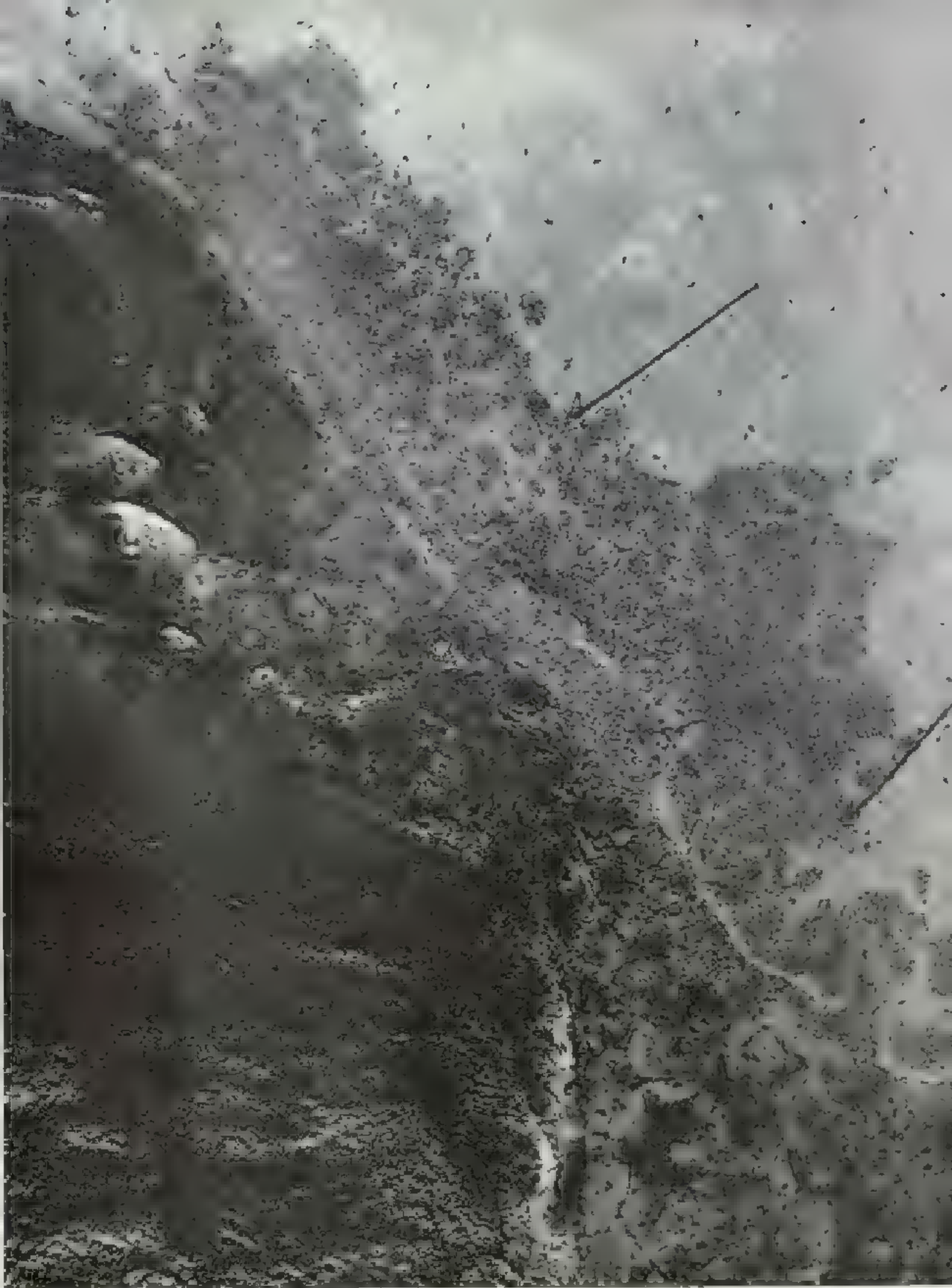
in the Philippines and sent her to the San Diego Foreign Office in London. She was later sent to the Philippines to work for the "American" government.

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A Seal Pup Born Every Five Seconds

[illegible]

There are very few people in the world who are as popular as the smiling world actor. As with the hair, there is no doubt that he is supposed to be wearing the clapping black



An Airplane View Shows Seals Clustering as Known to be from Films Dropped by a Magnet
The following is a list of the names of the seals which were taken from the films which were dropped by a magnet. The names of the seals are given in the order in which they were taken. The names of the seals are given in the order in which they were taken. The names of the seals are given in the order in which they were taken.



Piers Let Men Walk Among Savage Bulls
Using these two platforms, biologists caught Polynesian
boaters' horns and note castles

landers, and a few of the old men and women. He took his first unsteady steps to carry himself clear of the shallow puddle of muddy water in which he rested.

His mother, crouched near by, alternately blent encouragement and snapped at a straggling pup that came too close to suit her. She sniffed her own anxiously, and repeatedly raised her voice in a series of loud and excited bleats. Strangely, the voice of a seal is quite like that of a sheep.

The mother neither licked her pup's wet coat nor helped him along with her mouth as a mother dog or cat might do. When frightened, she often grasp her newborn baby by the flippers and drag him out of harm's way. But this cow simply chose a comfortable spot and lay down on her side so that her pup could snuggle close and nurse from one of her four abdominal nipples (page 506).

At the height of the season, in mid-July, a pup is born on the Pribilof Is., a small island. Approximately one out of every 100 pups survive. Like the one in Khabarovsk, the Pribilof pup is a white seal. An albino is handicapped in the desperate battle for survival. It is a white seal, and it is conspicuous to predators. A white seal is easy prey to the seals and a few survive to adulthood.

Pups at First Fear the Water

A seal, like other mammals, is entirely dependent on its mother's milk for its first food. Unlike most mammals, however, the seal pup feeds irregularly during the three-month nursing period. This pup's mother probably stayed with him a week, then left for a foraging expedition at sea of perhaps a week's duration. In the old days, pelagic sealers often killed cows with milk a hundred miles or more from the breeding island.

When his mother returns, the pup makes up for lost time. To quench his insatiable appetite, he drinks about five times as much as a human infant of the same body weight. Toward late summer the pup's stomach may contain as much as a gallon of rich, creamy milk after a feeding.

A pup in this condition looks more like a little black balloon than a seal, and he finds difficulty in moving about on the rocky beaches. He soon drops into a deep sleep almost a stupor, and remains so for several days after his mother has gone back to the sea.

Altogether, the pups of the Pribilof Islands put on about 4,000 tons of weight during the summer, all gained on mothers' milk.

Pups do not venture to swim until they are about a month old and at first are quite fearful of the water.

One little fellow demonstrated this as we walked along a breeding beach near the water's edge. Most pups near by saw us approach-



Treeless Rain-swept, and Wind-lashed Are the Probable, Five Dots in the Herring Sea

As a result, the United Nations has been able to bring together a wide range of countries, including the United States, to work together to address the challenges of the world. The United Nations has been able to bring together a wide range of countries, including the United States, to work together to address the challenges of the world.

ing, and he was among the leaders. His constant effort to awaken the thousands who had only raised his head to the level of the human condition, and the old saying "see no evil, hear no evil, speak no evil,"

[illegible][illegible]

prohibiting that. But if that's what would have
 become of him, and we not returned him
 to his country, that's

When a male pup is born, it is pinkish. As he begins to grow, his skin turns blue in some places. The spots with the yellow growth, in other words, appear. If, however, the pup does not grow, the yellow growth is rejected before it is born. The skin does not reach the stage of blue.

[illegible]



A Tight and Roomy Aleut Boat Ferries Passengers from the Harborless Peninsula

The small, crowded boat shown in the photograph is the only one of its kind in the world. It is a traditional Aleut boat, built of walrus skin and used for ferrying passengers and goods between the mainland and the islands of the Bering Sea. The boat is small and crowded, with passengers and goods packed closely together. The water is choppy, and the boat is moving quickly across the surface.

and the water is very cold and the boat is very small and crowded.

The boat is very small and crowded, with passengers and goods packed closely together. The water is choppy, and the boat is moving quickly across the surface.

As the pup apparently does not begin to swim until it is about 10 days old, the mother must take care that its mother will never return. The pup is born in the late fall when instinct bids her move southward. The pup is born in the late fall when instinct bids her move southward. The pup is born in the late fall when instinct bids her move southward.

The pup is born in the late fall when instinct bids her move southward. The pup is born in the late fall when instinct bids her move southward. The pup is born in the late fall when instinct bids her move southward.

In August the pathetic bodies of baby seals after the breeding grounds. In 1950 we counted 100,000 dead pups on St. Paul Island alone; practically all were victims of hookworm, as nearly as we could determine.

The question is, of course, what can be done to halt such losses to a minimum. The problem is still unsolved. Dr. J. W. Ward, Olsen, a Government scientist, returned from the islands with many specimens from which we are studying the life history of the hookworm. We are looking forward to his return and to his controlling the ravages of the disease.

Killer Whales and Sharks Kill Many

What enemies killer whales have during their long migration is not known. Killer whales are found in all parts of the world. Near the Pribilof Islands, at least three kinds of killer whales have been seen. One is the killer whale, another is the killer whale, and the third is the killer whale.

Killer whales are found in all parts of the world. Near the Pribilof Islands, at least three kinds of killer whales have been seen. One is the killer whale, another is the killer whale, and the third is the killer whale.

seals with flippers scarred or missing as if chomped away by some strong-jawed creature of the deep.

When icy fatigues lash the Pribilofs, the fur seals begin to vanish. Where do their winter travels carry them? We are still trying to answer this question completely.

During the late falls of 1947 and 1948 we cruised in Bering Sea and North Pacific waters aboard the research vessel *Black Douglas* and spent many hours searching the sea from the gallothouse. We have concluded that seals begin to leave their summer breeding grounds during October and continue to depart in ever-increasing numbers until late November. The old bulls remain for the most part in Alaskan waters, but young males and females fan out over a much wider area, a few even striking as far south as the Mexican border.

Following the Fur Seals South

As we rolled and pitched through Unimak Pass in the Aleutian chain one stormy day in late November, we saw many seals headed southward. Often they leaped clear of the water, "porpoising" in the hugo of the sea-laring man. They were traveling singly or in small scattered groups of two to four.

We have never been able to confirm the popular belief that fur seals travel at sea in large herds, or "rafts." Since they are extremely gregarious on land, it seems strange that they lead an almost solitary existence during the winter.

Through a fortnight of incessant rough December weather, we traveled from Dutch Harbor to San Francisco's Golden Gate. Every day, even when we were a thousand miles from land, we saw a few seals.

When we reached warmer waters about 50 miles off central California, the number of seals increased sharply. All along the continental shelf of our Pacific coast we found them, as did the pelagic sealers of the last century, working out of San Francisco in sailing vessels. Seals are most abundant 20 to 50 miles offshore, singly or in groups of up to five or six.

During a trip along the western Aleutian chain as far as Attu we saw few seals. But the Japanese have long reported to us that some Alaska-born seals travel to the western Pacific.

Several of our Pribilof tagged seals have been recovered in Oriental waters, although the evidence indicates that the bulk of the Alaska herd winters off the shores of the United States and Canada.

Whether the seals go southeast or southwest during their 5,000-mile winter migration, the fact remains that they are, next to man, the most widely traveled of all mammals breeding on land.

The claim of the Japanese that fur seals were damaging their local fisheries led them in October 23, 1941, to abrogate the treaty of 1911 and to resume hunting seals on the high seas.

Following the dissolution of the treaty, the United States, in 1942, completed a provisional arrangement with Canada under which we now deliver to her one-fifth of the annual Government harvest of Pribilof seal-skins. In return, Canada forbids her nationals to hunt seals on the high seas, thus allowing them to feed unmolested along her extensive British Columbia shore.

The food of the fur-seal herd is, naturally, a subject of concern to commercial fishermen of the North Pacific. Although scientists have examined 1,300 seal stomachs, they still would like more data on the year-round feeding habits of seals.

"Why not examine the stomachs of all the animals killed on the Pribilof Islands?" you may ask. The seals are most uncooperative here, for not one of them comes ashore with food in its stomach. They digest it at sea.

Last spring one of us traveled to Sotka, Alaska, and accompanied the Tlingit Indians on a sealing expedition. Under the provisions of the current treaty, the natives take a small number of seals each year as the animals pass Sotka on their northward spring migration. On this occasion they took 41. Forty of these seals had fed entirely on herring and one on squid.

Our colleague, Ford Wilke, recently returned from Japan where he examined the stomachs of seals which he and Japanese fishermen collected. He found that the stomachs contained squid and lantern fish, with small amounts of pollock. The lantern fish is a small, sardinelike fish with luminous spots.

The data available to us from the examination of 1,300 seal stomachs indicate that fur seals feed on squid, herring, lantern fish, pollock, smelt, salmon, and rockfish, in that order of frequency. Thus it appears that the bulk of the fur seals' diet consists of marine life having slight commercial value.

Seals Dive 200 Feet for Prey

During the early 1940's, when certain vitamins were worth their weight in gold, fishermen were receiving as much as \$10 a pound for soup-fin shark liver, a substance rich in vitamin A. From shark nets set on the coasts of Oregon we recovered the drowned bodies of two fur seals. Both had become entangled more than 200 feet below the surface, giving us for the first time an idea of the depth to which seals will dive for food.

Fur seals appear to feed mainly at night.



A Different Outboard For Seal Away: His Harem in the Pribilofs

The Pribilof Islands, located in the Gulf of Mexico, are the only place where the world's largest colony of Caribbean monk seals lives. A few years ago, a young seal named "Pete" was born there.

Pete's father, a large, powerful male seal, had a harem of several females. He was the dominant male in the colony, and he was responsible for protecting his territory and his pups.

When Pete was born, he was the only pup in the harem. But as he grew up, he began to challenge his father's dominance. He was a strong, confident pup, and he was determined to take over the harem.

One day, Pete's father was out of the water, and Pete saw his chance. He swam up to his mother and began to nuzzle her. He was trying to show her that he was the one who should be taking care of her.

• An Amazing Story of a Seal's Life

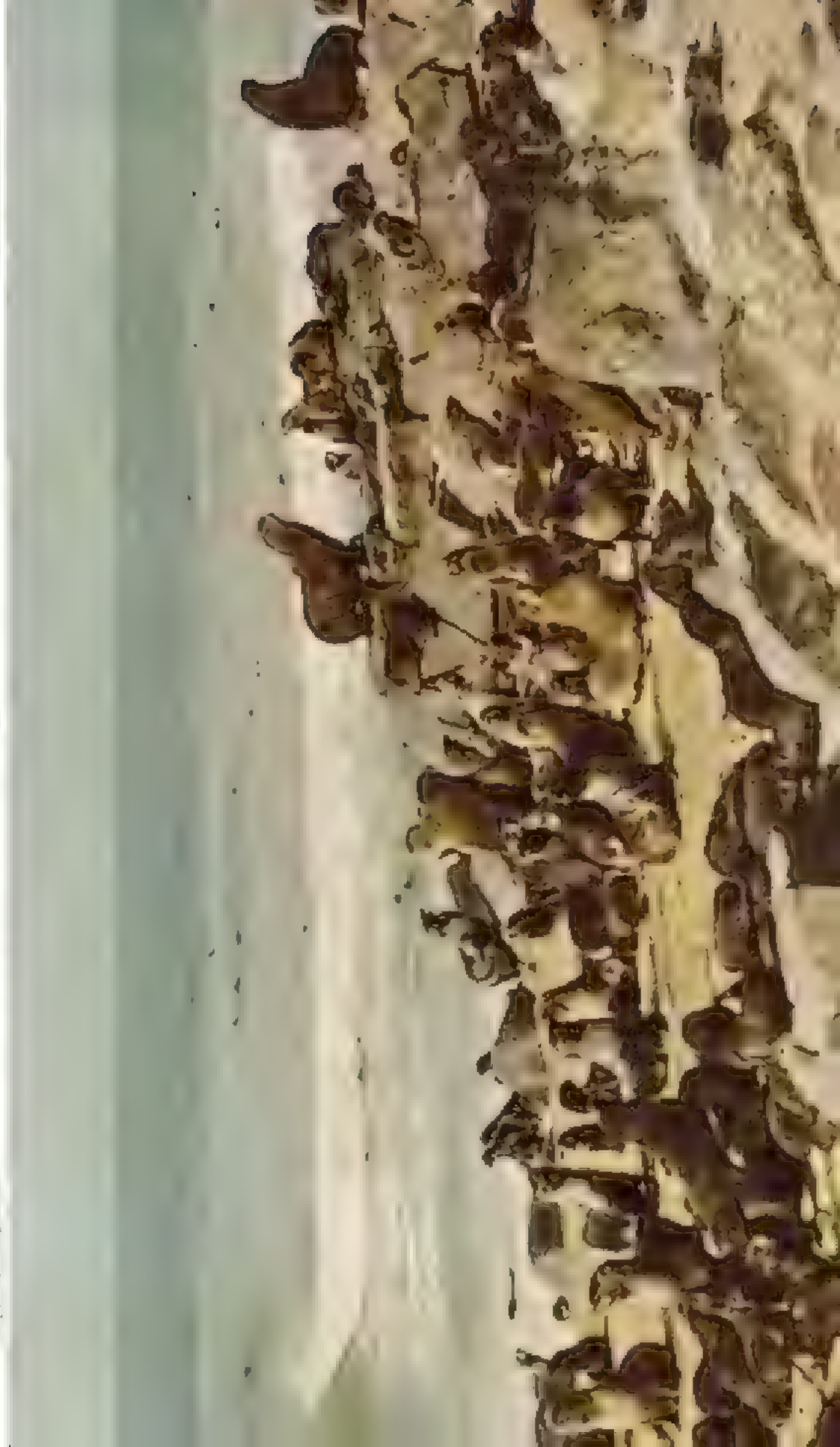




4 Mills, Cows, and Pigs. Round Lake u. Carman. From St. George Island's Rock-stone Quarry

4 The following are the names of the persons who have been employed in the quarry since its opening in 1880.

1880. 1881. 1882. 1883. 1884. 1885. 1886. 1887. 1888. 1889. 1890. 1891. 1892. 1893. 1894. 1895. 1896. 1897. 1898. 1899. 1900.





A Sealing Camp Sows Rachel. Hills near St. Paul Village, an Aleut Settlement

Photograph taken by the U.S. Fish and Wildlife Service, Alaska, in 1964. The photograph is a color print of a black and white photograph. The photograph shows a large flock of sheep grazing in a field. The sheep are white and black. The field is green and brown. In the background, there are hills. The sky is blue and white.



Survivors Strangely Show No Grief as Comrades Go to Their Last Roundup

It is a day of mourning for a year. That is how the people of the United States, Canada and other countries feel. The people of the United States and other countries feel a sense of mourning for a year.



Common Biological Names of Grasshopper and Mormon Hoppers, Tag 2, 1901, Pops a Day at St. Paul Island

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Hond Farmer Alol, an Overhead Cow Pays Herself While Nursing Her Pup

Lower. Suddenly about a foot of the pup's back struck the cow's udder. The calf pulled it
 upward to get at the milk. The cow's head was turned toward the calf.

Dr. G. Dallas Hanna, of the California Academy of Sciences, wrote us recently that while he was collecting fish under a brilliant electric light off California a fur seal made a nuisance of itself by "hijacking" small lantern fish as we attempted to catch them in a hand dip net.

At sea during the day we usually see seals loafing or sleeping, and we find that animals collected in the morning tend to have more in their stomachs than those taken in the after-

noon.

Further evidence of the night feeding of the fur seal was given us by a sailor who was fishing from the deck of a boat at anchor off the Pribilofs. It was midnight, moonless and foggy. Fishing was poor. The hook was at the bottom, 30 feet below. Suddenly the sailor felt a tug at his line. When he pulled it in, a flashlight revealed a young fur seal on the hook.

Not eager to risk an encounter with the teeth of the highly indignant beast, the seaman was relieved when the hook tore loose and the seal departed in haste.

Too Many to Count Exactly

The size of the population of Pribilof fur seals is a matter of interest to many groups. To the Aleut residents and to the men and women of the American fur trade, seals are a source of livelihood. Commercial fishermen, on the other hand, look upon seals as competitors for fish.

In 1949 we were assigned the task of taking a census of the seal herd. Fortunately, the entire herd assembles at definite places on the Pribilof Leaches at a definite season of the year. Seldom does a seal go ashore elsewhere unless it happens to be injured.

We soon found, however, that there were drawbacks to our job. The females and young males are constantly moving back and forth between the sea and the beach. Only the harem bulls and pups remain on land for long. Thus, only a portion of the herd is available for counting at any given time. The harem bulls are readily counted; the harem cows are not.

Since each cow bears only one pup, we can find the size of the actively breeding cow population if we count the pups in late July while they are still on land. The number of pups is so large, however, running into the hundreds of thousands, that since 1922 it has not been considered feasible to make an actual count.

With these ideas in mind we brought a twin-engineered Beechcraft equipped with an aerial camera to St. Paul Island in 1948 and photographed all breeding areas. On many of these pictures seals and rocks appeared to blend, making a count of individual animals

impossible. Yet the masses of animals and the outlines of the rookeries showed up well (pages 49-51). We achieved useful results by measuring the occupied breeding areas and by integrating these with sample, or "yardstick," counts made on the ground.

We are still not completely satisfied with the results and are working on a method of counting pups directly. We are also studying the return of tagged seals as a clue to the numbers in each age class.

From 1911 to the late 1930's the herd was growing steadily, and a method of computation was established which we believe satisfactorily represented the population from year to year.

This system became obsolete when the population reached its natural ceiling: that is, when the herd matured, or came of age. There are just too many seals to count. As a result, for a little more than a decade the number of seals in our herd has been imperfectly known. By a combination of methods we have arrived at our present tentative estimate of 1,500,000.

The herd has ceased to grow and is in balance with the natural factors of life and death which limit its further expansion. Two of the most important factors are, we suspect, the limited summer food supply within swimming range of the nursing mothers, and the increased disease rate on the breeding grounds, a result of overcrowding.

But in spite of their great numbers, the Alaska fur seals are not the world's most abundant seals. According to Dr. G. C. L. Bertram, Director of the Scott Polar Research Institute, the crabeater and Weddell seals, fringing the entire Antarctic Continent, compose larger groups running into millions. The crab-eaters and Weddells are hair seals, unimportant commercially at present.*

Pups Bite the Hand That Tame Them

Shortly before the tempestuous Bering winds strike the Pribilofs in the fall we conduct our annual pup-marking operations. To date, we have branded or tagged more than 75,000 pups.

The job is a rugged one, since pups at this season have learned to use their sharp little teeth, and they weigh from 20 to 30 pounds. After two strenuous weeks spent in placing metal tags on the flippers of 20,000 angry little beasts, we emerge from the fray with torn clothing, bitten hands, stiff backs, and a lost love for seals (pages 504 and 505).

The permanently marked animals which are recovered year after year provide valuable information. For example, by finding the

* See "The Conquest of Antarctica by Air," by Richard E. Byrd, NATIONAL GEOGRAPHIC MAGAZINE, August, 1939.

percentage of tagged to untagged animals in the current harvest, we are able to approximate the number of pups that were born during a certain past season of tagging.

Recovery of a tagged animal over a year gives data on growth and maturation. Seven seals which were hot-trap branded as pups in 1942 were seen on the Pribilofs in 1953, thus giving us a definite rate of maturation on the Pribilofs for our seals. The oldest seal now living is probably around 25 years of age.

Metal tags may identify a Pribilof animal when it is recovered on a distant shore, thus adding to our knowledge of seal migration. During the stormy winter of 1949-1950, the bodies of 30 pups bearing tags were washed ashore on the coasts of Washington and Oregon. Knowing what proportion we marked, we deduce that there were 700 to 800 untagged as well as tagged seals washed up along these distant shores. The seals were probably at sea and never found.

For many years, our greatest biological research was hindered by our inability to determine the age of a seal unless we had tagged it as a pup. Recently, through studies of known-age specimens, we discovered that a seal's teeth furnish a valuable clue to its age.

During the winter, while a seal is at sea, it eats more than during the summer breeding season. A record of the winter season of plenty is left as a ridge on the root of each tooth, while the summer season of fasting forms a depression.

A Norwegian biologist, Dr. Johan T. Kuus, has found a similar record of age on the baleen plates of Antarctic whales. Whales, like seals, feed in different pastures at different seasons.

Humane Harvest of Seals Each Summer

To many of us "fur seal" means a seal ripped out of its own or its skin, but Government Alaska sealers have a different idea. The annual harvest of seal skins begins on the Pribilofs as soon as the three-year-old males appear in mid-June and ends by the last of July.

At the onset of a normal mid-July morning the clouds and fogged us into reluctant activity. We pulled on our wooden clothes and topped them off with oil-skins and rubber boots. The temperature is normally around 40° F., and a wind-blown drizzle often makes it seem even colder.

When we stepped outside, the rain that hit our faces completed the process begun by the alarm clock. We met several Alaskan sealers warmly clad like ourselves and joined them on their way through the murky, mid-summer twilight to the bankhouse for seal skins.

After hot coffee and potatoes we returned for a short chat with Victor M. J., the village foreman, as he supervised the loading of men, clubs, and knives into big red trucks.



"Good sealing weather," he remarked with a friendly grin.

If it is raining hard, few seals stay on land and if it is clear and dry, the sealing roundup must be made very slowly to avoid overheating the fat and thickly pelted animals. A day with heavy fog is ideal.

By 11 a.m. the equipment was loaded, and the 50-man crew was aboard the trucks. Off they rumbled into the mist and over the red scoria road that leads to Palovina Rockery, six miles from St. Paul village. Charles H. Anderson, the Government's resident manager on St. Paul Island, and foreman Victor led the procession. We brought up the rear in our "Biology Hot Rod."

All the breeding grounds, or rookeries, have old Russian names; for example, Zolotaya Morjovi, and Staraya Arul. They cover about a fifth of the shore line and have remained





St. Paul School, built by the U.S. Navy, is the largest building on the island.

which he discovered three days later by the natives in 1780 and 1781.

There are 12 breeding groups in St. Paul and six in St. George, each with 19 nearby hauling ground where the young male seals, according to local natives in the area, have been the last for.

Drive of Young Males Begins

From the hauling grounds, seals are usually driven to the hauling grounds. Some of the groups are large and others are small. They are usually driven to the hauling grounds in the morning, very early in the day. The seals are driven to the hauling grounds in the morning, very early in the day. The seals are driven to the hauling grounds in the morning, very early in the day.

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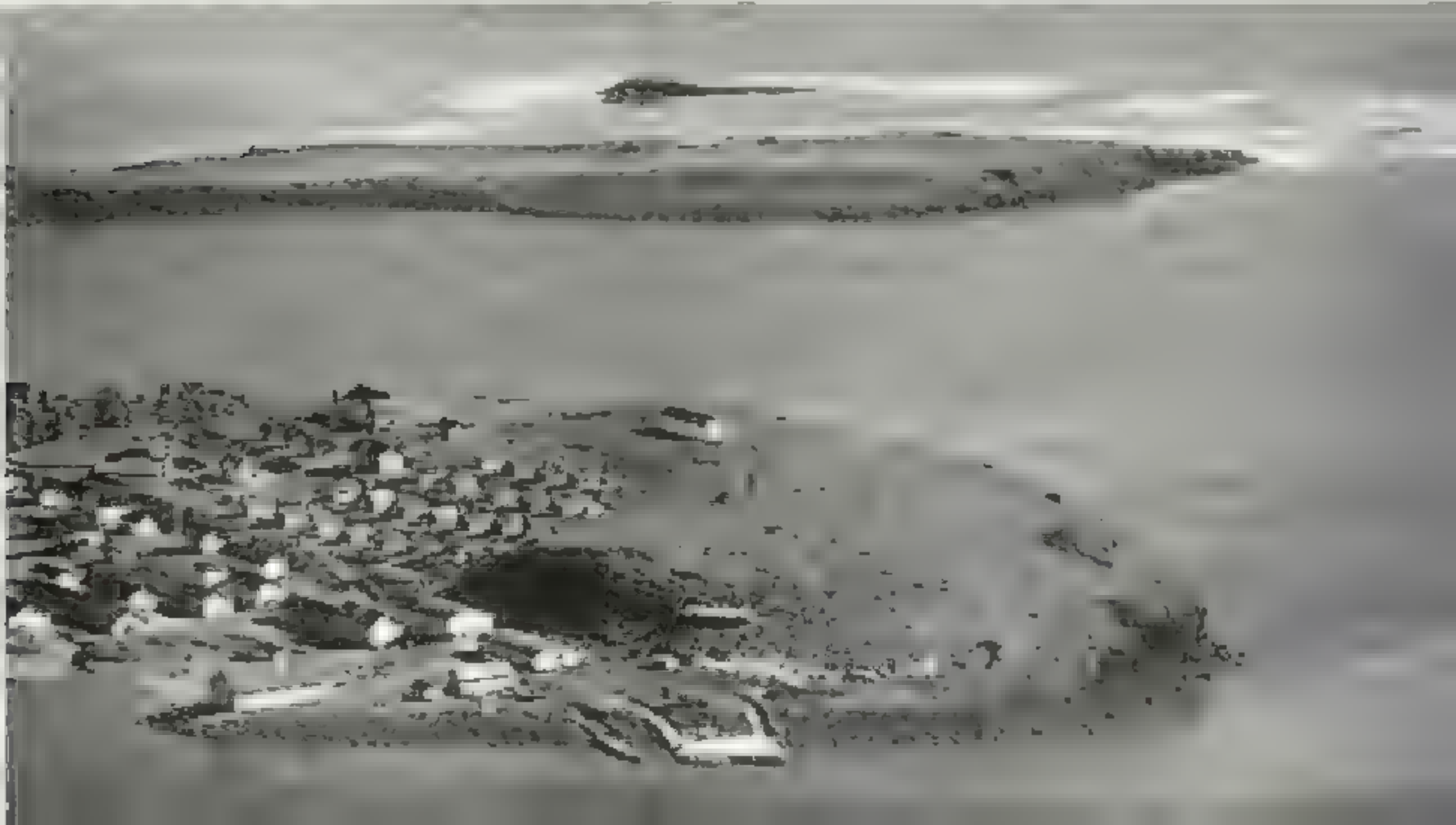
350 Adults Call St. Paul Village Home; Three Seal Colonies Live on the Neck of Land Next Door

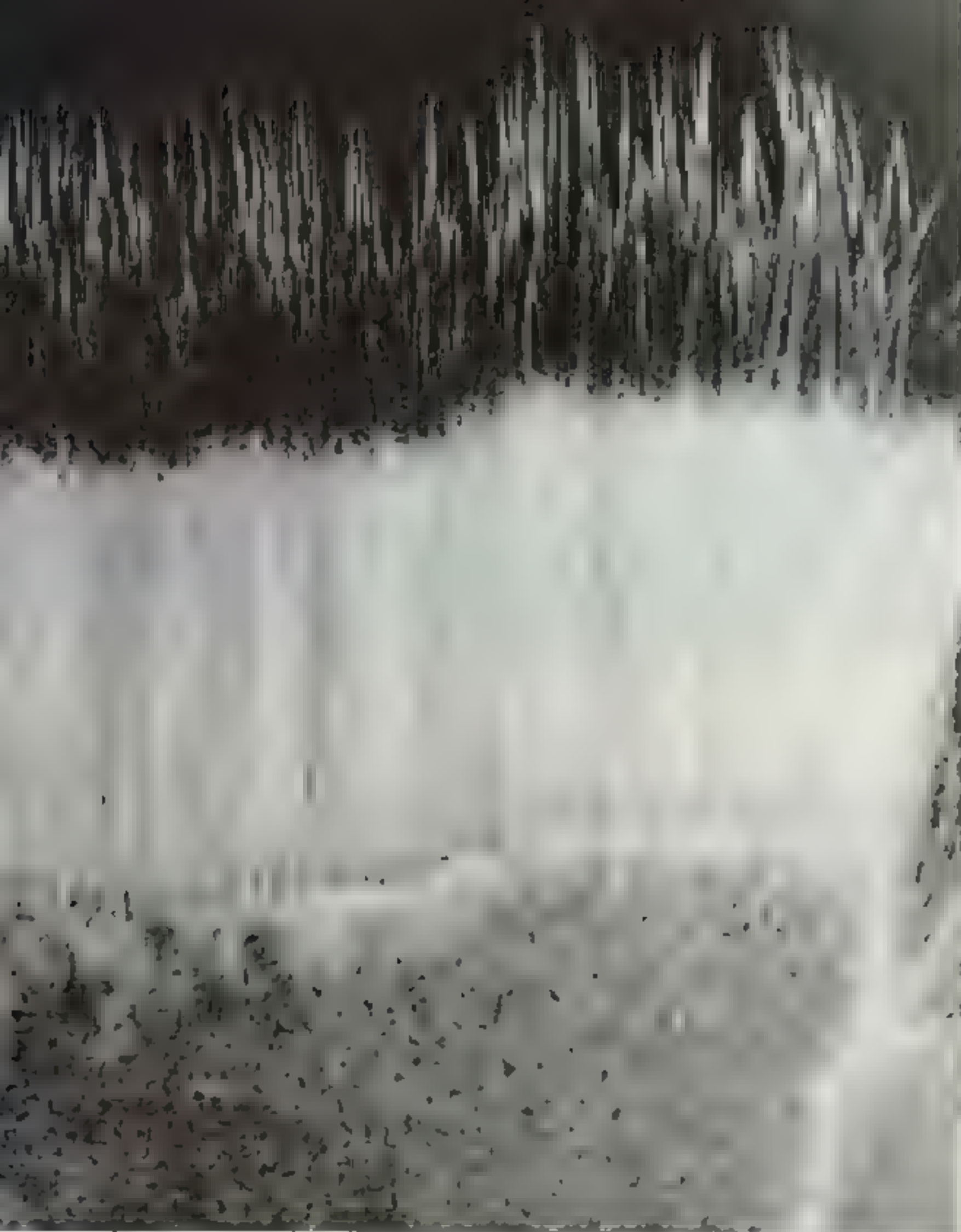
Adolescents help with hauling in the morning, and the hauling grounds are usually in the morning. The seals are driven to the hauling grounds in the morning, very early in the day. The seals are driven to the hauling grounds in the morning, very early in the day.

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Coarse Guard Hairs Protect Silky Underlayer

The first of these is the fact that the Commission has not yet received any information from the Government of the United Kingdom regarding the progress of the investigation into the alleged involvement of British intelligence services in the activities of the IRA. This is a matter of great importance to the Commission, and it is hoped that the Government will provide the necessary information in the near future.

White always lives in English, and then
 reads newspapers in Arabic. Like many in
 the oil industry, he is a very wealthy man.

We take a second trip across the wet off-shoots through the clinging weed-high grass. The mud is still so effective at a barrier and volume and a low surface of water. In Hong Kong by rivers of the mainland. Northern grasses are fully soaking. Insects, though, flies and beetles are still with flying and with activity.

Bankers Said Aspett

Now we assembled a group of about 100 birds, we walked up the long stream, where there is the big waterfall, looking for a good place to camp early in the morning. The water is very hot.

A further suit was brought up and filed with this court and would deal in part with the

[illegible]

The undersigned
 hereby certify that
 the within and foregoing

He joined a local work-
ing-class, was elected
chairman of the local
union, and was elected
to the state union, and
then to the national
union. He was elected
to the national union
and was elected to the
national union.

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The first two rows are the same as the first two rows of the original matrix, but the third row is the sum of the first two rows, and the fourth row is the sum of the first three rows.

Students can be
encouraged to use
the rubric as a guide. In
writing, students can
highlight new ideas. But
the key was finding a
way to ensure that the
students were studying
solidly and using their
own resources.

A few minutes later
 reached a large, brightly
 furnished room, where
 a woman in a white dress
 sitting at a table, and the
 man went to her, smiling.

[illegible]

Soon, with a loud burst of long explosive
the men laid out in a series of jumps
into the pool of about a hundred feet
and were coming out slowly and with fre-
quent cries toward a broad level place
marked as a run-way. The men's voices
were all lifted in the murmur and dip-
ping as a hundred feet or thirty couples the
earth.

Close the seals with ropes from the water. They may be seen as easily as sheep. Yet the men were cautious and alert for the flocks of a seal are strong and their teeth are as sharp as knives. More than once careless sport has suffered a punishment.

sealing has its higher side. A man up
should fasten up these human organs.

praying someone. Quickly he reached down and clasped her round by the waist in his arms. The victim responded with a frenzied leap and a wild yell, sure he had been bitten by an angry snake.

Within half an hour of the seals had been driven to the edge of the killing field. Then they were separated into a large group and were allowed to rest where the men assembled their equipment (page 24).

The killing is far from the only one reported, with a large number of the hoodlums sitting on the porch clubbing boys like in overgrown basketball

[illegible]

Survivors Show No Sign of Fright

Through many years of experience and to select the best seals we had for commercials with the size range and discuss those too large or too small. About a third of the seals on this particular morning were rejected and I owed to make them was back to the bank. I had not a bit of money, and

Oddly enough, seals are not frightened at the sight of their fellows being killed. The rejects soon are slung peacefully on the hauling ground. As if bent on a rendezvous with death, certain marked individuals reappear time after time in the drive-throughout the season.

Amid exclamations in English and Aleut, the selected animals were laid out in rows of 10. "Andy," the resident manager, took the length of each seal as it was reported to him by the caliper man, or sender. These measurements, more than a million and a half now on record, help us follow the trend of the harvest and watch the growth rates of seals off Alaska.

It is not possible to say that the *Journal* is a good or bad journal, or that it is a good or bad journal for a particular group of people. It is a journal, and it is a journal that is worth reading. It is a journal that is worth reading for a variety of reasons. It is a journal that is worth reading for a variety of reasons. It is a journal that is worth reading for a variety of reasons.

1.2. The \mathbb{Z}_2 -action on the \mathbb{Z}_2 -equivariant spectra $\mathcal{H}\mathbb{Z}$ and $\mathcal{H}\mathbb{Z}/2$ is given by



51.

3. **How to use the book:**

Sealskins Stretch and Dry on Hooks in St. Louis

Figure 1. The effect of the concentration of the polymer solution on the surface free energy of the polymer film. The surface free energy of the polymer film increases with the concentration of the polymer solution. The surface free energy of the polymer film is 1.5 J/m² at 0.1 g/dl, 2.5 J/m² at 0.5 g/dl, 4.5 J/m² at 1.0 g/dl, 6.5 J/m² at 1.5 g/dl, 8.5 J/m² at 2.0 g/dl, 10.5 J/m² at 2.5 g/dl, 12.5 J/m² at 3.0 g/dl, 14.5 J/m² at 3.5 g/dl, 16.5 J/m² at 4.0 g/dl, 18.5 J/m² at 4.5 g/dl, 20.5 J/m² at 5.0 g/dl, 22.5 J/m² at 5.5 g/dl, 24.5 J/m² at 6.0 g/dl, 26.5 J/m² at 6.5 g/dl, 28.5 J/m² at 7.0 g/dl, 30.5 J/m² at 7.5 g/dl, 32.5 J/m² at 8.0 g/dl, 34.5 J/m² at 8.5 g/dl, 36.5 J/m² at 9.0 g/dl, 38.5 J/m² at 9.5 g/dl, 40.5 J/m² at 10.0 g/dl, 42.5 J/m² at 10.5 g/dl, 44.5 J/m² at 11.0 g/dl, 46.5 J/m² at 11.5 g/dl, 48.5 J/m² at 12.0 g/dl, 50.5 J/m² at 12.5 g/dl, 52.5 J/m² at 13.0 g/dl, 54.5 J/m² at 13.5 g/dl, 56.5 J/m² at 14.0 g/dl, 58.5 J/m² at 14.5 g/dl, 60.5 J/m² at 15.0 g/dl, 62.5 J/m² at 15.5 g/dl, 64.5 J/m² at 16.0 g/dl, 66.5 J/m² at 16.5 g/dl, 68.5 J/m² at 17.0 g/dl, 70.5 J/m² at 17.5 g/dl, 72.5 J/m² at 18.0 g/dl, 74.5 J/m² at 18.5 g/dl, 76.5 J/m² at 19.0 g/dl, 78.5 J/m² at 19.5 g/dl, 80.5 J/m² at 20.0 g/dl, 82.5 J/m² at 20.5 g/dl, 84.5 J/m² at 21.0 g/dl, 86.5 J/m² at 21.5 g/dl, 88.5 J/m² at 22.0 g/dl, 90.5 J/m² at 22.5 g/dl, 92.5 J/m² at 23.0 g/dl, 94.5 J/m² at 23.5 g/dl, 96.5 J/m² at 24.0 g/dl, 98.5 J/m² at 24.5 g/dl, 100.5 J/m² at 25.0 g/dl, 102.5 J/m² at 25.5 g/dl, 104.5 J/m² at 26.0 g/dl, 106.5 J/m² at 26.5 g/dl, 108.5 J/m² at 27.0 g/dl, 110.5 J/m² at 27.5 g/dl, 112.5 J/m² at 28.0 g/dl, 114.5 J/m² at 28.5 g/dl, 116.5 J/m² at 29.0 g/dl, 118.5 J/m² at 29.5 g/dl, 120.5 J/m² at 30.0 g/dl, 122.5 J/m² at 30.5 g/dl, 124.5 J/m² at 31.0 g/dl, 126.5 J/m² at 31.5 g/dl, 128.5 J/m² at 32.0 g/dl, 130.5 J/m² at 32.5 g/dl, 132.5 J/m² at 33.0 g/dl, 134.5 J/m² at 33.5 g/dl, 136.5 J/m² at 34.0 g/dl, 138.5 J/m² at 34.5 g/dl, 140.5 J/m² at 35.0 g/dl, 142.5 J/m² at 35.5 g/dl, 144.5 J/m² at 36.0 g/dl, 146.5 J/m² at 36.5 g/dl, 148.5 J/m² at 37.0 g/dl, 150.5 J/m² at 37.5 g/dl, 152.5 J/m² at 38.0 g/dl, 154.5 J/m² at 38.5 g/dl, 156.5 J/m² at 39.0 g/dl, 158.5 J/m² at 39.5 g/dl, 160.5 J/m² at 40.0 g/dl, 162.5 J/m² at 40.5 g/dl, 164.5 J/m² at 41.0 g/dl, 166.5 J/m² at 41.5 g/dl, 168.5 J/m² at 42.0 g/dl, 170.5 J/m² at 42.5 g/dl, 172.5 J/m² at 43.0 g/dl, 174.5 J/m² at 43.5 g/dl, 176.5 J/m² at 44.0 g/dl, 178.5 J/m² at 44.5 g/dl, 180.5 J/m² at 45.0 g/dl, 182.5 J/m² at 45.5 g/dl, 184.5 J/m² at 46.0 g/dl, 186.5 J/m² at 46.5 g/dl, 188.5 J/m² at 47.0 g/dl, 190.5 J/m² at 47.5 g/dl, 192.5 J/m² at 48.0 g/dl, 194.5 J/m² at 48.5 g/dl, 196.5 J/m² at 49.0 g/dl, 198.5 J/m² at 49.5 g/dl, 200.5 J/m² at 50.0 g/dl, 202.5 J/m² at 50.5 g/dl, 204.5 J/m² at 51.0 g/dl, 206.5 J/m² at 51.5 g/dl, 208.5 J/m² at 52.0 g/dl, 210.5 J/m² at 52.5 g/dl, 212.5 J/m² at 53.0 g/dl, 214.5 J/m² at 53.5 g/dl, 216.5 J/m² at 54.0 g/dl, 218.5 J/m² at 54.5 g/dl, 220.5 J/m² at 55.0 g/dl, 222.5 J/m² at 55.5 g/dl, 224.5 J/m² at 56.0 g/dl, 226.5 J/m² at 56.5 g/dl, 228.5 J/m² at 57.0 g/dl, 230.5 J/m² at 57.5 g/dl, 232.5 J/m² at 58.0 g/dl, 234.5 J/m² at 58.5 g/dl, 236.5 J/m² at 59.0 g/dl, 238.5 J/m² at 59.5 g/dl, 240.5 J/m² at 60.0 g/dl, 242.5 J/m² at 60.5 g/dl, 244.5 J/m² at 61.0 g/dl, 246.5 J/m² at 61.5 g/dl, 248.5 J/m² at 62.0 g/dl, 250.5 J/m² at 62.5 g/dl, 252.5 J/m² at 63.0 g/dl, 254.5 J/m² at 63.5 g/dl, 256.5 J/m² at 64.0 g/dl, 258.5 J/m² at 64.5 g/dl, 260.5 J/m² at 65.0 g/dl, 262.5 J/m² at 65.5 g/dl, 264.5 J/m² at 66.0 g/dl, 266.5 J/m² at 66.5 g/dl, 268.5 J/m² at 67.0 g/dl, 270.5 J/m² at 67.5 g/dl, 272.5 J/m² at 68.0 g/dl, 274.5 J/m² at 68.5 g/dl, 276.5 J/m² at 69.0 g/dl, 278.5 J/m² at 69.5 g/dl, 280.5 J/m² at 70.0 g/dl, 282.5 J/m² at 70.5 g/dl, 284.5 J/m² at 71.0 g/dl, 286.5 J/m² at 71.5 g/dl, 288.5 J/m² at 72.0 g/dl, 290.5 J/m² at 72.5 g/dl, 292.5 J/m² at 73.0 g/dl, 294.5 J/m² at 73.5 g/dl, 296.5 J/m² at 74.0 g/dl, 298.5 J/m² at 74.5 g/dl, 300.5 J/m² at 75.0 g/dl, 302.5 J/m² at 75.5 g/dl, 304.5 J/m² at 76.0 g/dl, 306.5 J/m² at 76.5 g/dl, 308.5 J/m² at 77.0 g/dl, 310.5 J/m² at 77.5 g/dl, 312.5 J/m² at 78.0 g/dl, 314.5 J/m² at 78.5 g/dl, 316.5 J/m² at 79.0 g/dl, 318.5 J/m² at 79.5 g/dl, 320.5 J/m² at 80.0 g/dl, 322.5 J/m² at 80.5 g/dl, 324.5 J/m² at 81.0 g/dl, 326.5 J/m² at 81.5 g/dl, 328.5 J/m² at 82.

been taken each summer during the recent post-war years. In striking contrast, the average harvest during the 20-year period of exploitation, 1871-1900, was much smaller. The "natural recruitment" of the blue ling stock was being destroyed at that time. In few years, and those who did, few could

These carrying skins and cartridges were directed toward the village. The skins are covered in by employees of a house for the people of St. Louis. Missouri, and were sent to the house for disposal all the skins and skins for the Government.

[illegible]



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Vol. 1, No. 1, 1918

Not a Frown in a Classroom. Happy Alaskan Children Attend School on St. Paul

How good the local school attendance is, even at this season, when the children are busy with their work, is shown by the fact that the school on St. Paul is now open for the first time in its history.

Animal products under Government supervision.

The Alaska sealers have been so busy with their work that they have not had time to go to the government sealers and it is true that the market value of sealers is high. But the government sealers are now open for the first time in its history.

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As we were about to leave for the village, a motor suddenly appeared in our direction with a man.

"Where is that man?" he asked. "We get God's message."

Today on the St. Paul and St. George, we are the primary of 1918 and 1919. The Alaska sealers have been so busy with their work that they have not had time to go to the government sealers and it is true that the market value of sealers is high. But the government sealers are now open for the first time in its history.

Since the discovery of the Alaska sealers, the Alaska sealers have been so busy with their work that they have not had time to go to the government sealers and it is true that the market value of sealers is high. But the government sealers are now open for the first time in its history.

We hope that the Alaska sealers will continue to work and that the government will be able to increase and maintain the revenue from a great natural resource.

Portsmouth, Britannia's Sally Port

From King Alfred to the New Queen Elizabeth, British Fleets
Have Fared Forth from This Citadel of Sea Power

BY THOMAS GARNER JAMES

Field Experiments by Norman G. Campbell, Photographs by R. Arthur Stewart

OUR triumphs, eight days out of New York, and no possible chance of the Narcissus of Joseph Conrad. But as I stood on the wet deck in the half-dawn of that first postwar spring and watched the dark landfall ride over the rim of the English Channel, I thought of his salute to the "tribes of fleets and nations."

The Britain I was meeting for the first time needed no better introduction than those full-rigged phrases of the Anglo-Polish sailor and novelist:

* Guarding priceless traditions and untold suffering . . . The great flagship of the race; stronger than the storms! and anchored in the open sea." *

All that afternoon we drove up-Channel like a China clipper with fresh tea in her hold; tiny fishing trawlers bounced from our bow wave. Aboard our transport, still in her war paint, were haggard, homesick Britishers newly freed from Japanese prison camps.

The Britain I watched passing to port was like our ship, still in battle gray. Every misty headland bore its Lloyd's signal station or radar tower. An aircraft carrier and two destroyers challenged and blinked us by. The sea air was chilly as a sentry.

Sea Watchdogs Guard Approaches

At the turn southeast of the Isle of Wight we met Britain's reception committee—a phalanx of sea-bed forts and fighting ships. Like unmounted thousands of vessels before us, we followed the tide into Southampton Water by permission of the watchdogs of Spithead and Portsmouth (map, page 515).

That was on East side of Salt old Port mouth, or "Pompey" as the sailors call it, single-minded base for a maritime power whose heart pulses with the beat of the sea.

Since then, as if by a whirlpool, I have been drawn back many times by Portsmouth's harbor and history, its fleet and its tides. In six years of seeing this naval base in all moods and weathers, I have come to respect the Royal Navy's steadfastness in "guarding priceless traditions" as one of the few reliable beacons left in a storm-tossed world.

On the eve of 1952, when the world still had found no peace, I stood with my friends Lt. Col. and Mrs. Harold Wyllie on the

windy balcony of their Ship Tyger Flut at the top of Tower House, overhanging the narrow tide-ruffled entrance to Portsmouth Harbour.

Within the circle swept by our telescope I could see all the panoply of centuries of sea power contained in one great panorama.

Veterans of Korea and Trifolgar

Some three miles to the southwest, down the path of the low winter sun, the light fleet aircraft carrier *Thetis*, not long returned from battle in Korean waters, lay at anchor in Spitiyeul.

Near by, black against the somber blue of the Isle of Wight's hills, a big new aircraft carrier, H.M.S. *Eagle*, was practice-catapulting her first brood of fighters.

A few cables farther on swung the carrier *Karel Doorman*, once H.M.S. *Uzushiba*, purchased from Britain by the Dutch—Britain's foe of old, now long a staunch ally.

High above us, vapor wakes from invisible jet planes congealed in the icy air.

Fifty feet beneath our balcony, seas broke on the stone parapet as a steel-blue submarine, swinging head over to cross the tide into Hinder Lake, flipped her wash against the base of the tower.

At the Royal Dockyard Jetty, a pistol shot to leeward of the harbor entrance, the carrier H.M.S. *Warrior* had been loading troops and supplies for a fast run to Middle East trouble zones a few weeks earlier. There now lay H.M.S. *Indomitable*, carrier flagship of the Commander in Chief of the Home Fleet.

Between us and *Indomitable* a constant stream of water traffic eddied in the half-mile triangle bounded by the Dockyard, the harbor entrance, and Gosport Hard (page 524).

Cross-harbor ferries run so uninterruptedly that tars and workmen seemed to catch them on the fly, leaping from quay to bobbing boat like pieces of scrap to a moving magnet. Housewives with their shopping baskets were as nimble as the sailors and workmen.

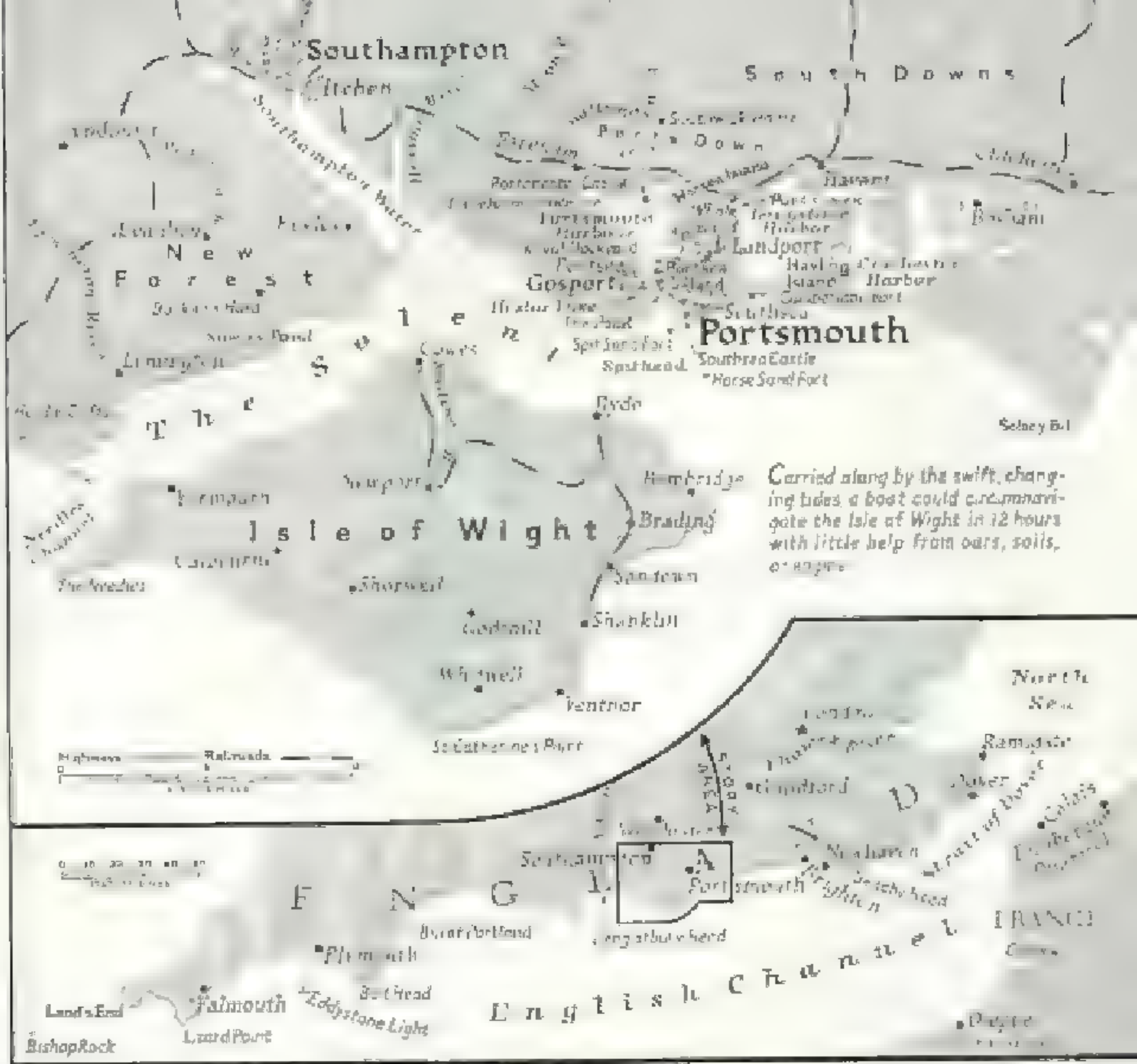
Weaving in and out through the commercial traffic, the little boats of the Royal Navy were using the crowded water to teach handling and discipline. On even the tiniest

* From *The Hacker of the Suez Canal*, by Joseph Conrad, J. M. Dent & Sons, Ltd., London.



Troops Bound Overseas Pipe a Salute to Portsmouth's Beloved U.S.S. Victory

As the Battle of the Atlantic rages, the great battleship, the U.S.S. Minnesota, is the only one of her kind in the world. In 1941, when the battleship was launched, it was the only one of her kind in the world. The ship was built at the Portsmouth Naval Shipyard, and it was the only one of her kind in the world. The ship was built at the Portsmouth Naval Shipyard, and it was the only one of her kind in the world.



Portsmouth, Fair of British Warships, Is the Commonwealth's Greatest Naval Base

The harbor has sheltered warships for some 1,600 years. It has known Roman galleys, the "long respect" of the British fleet, and the "long respect" of the British fleet. The harbor is the largest in the world, and the only one in the world that is a natural inlet separating city and navy base from the mainland.

sailors lined the foredeck at parade rest, making their vessel look its smartest. Helmsmen of craft dodging the nearest neighbor barely had time to sigh with relief before another converging vessel raised a new and tougher traffic problem.

All about us a thousand hooters, signal flags, flashing lights, and speeding picket boats exposed the sleepless nerves of Britain's senior dockyard and pre-eminent naval base.

In the very center of all this white-waked hustle and welding-torch glitter of a keyed-up command post rose the checkerboard strakes, scarlet gun ports, and noble stern canals of two wooden sailing ships—as eloquent as battle standards in giving the fourth dimension of time to the wintry glories of the scene.

Lord Nelson's full-ripped *Victory*, shored up in Britain's oldest graving dock, flew at the main the St. George's cross flag of the Commander in Chief, Portsmouth. Across the harbor on the Gosport side, almost but stripped of masts and rigging, lay the 134-year-old Bombay-built frigate *Foudroyant* (page 520).

Even more than the great modern carriers, these two lumbered veterans seemed to breathe into the Atlantic wind the mighty invocation.

Rise, Britannia! Britannia rule the waves!
Britons never, never, never will be slaves!

Victory—whose keel was laid down in 1759, seventeen years before the American Colonies declared their independence—had survived her latest war in accustomed Navy fashion:



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Ferry and Submarine Pass in the Narrow Entrance of Liverpool's Harbour

Passing the West Country house, a large ship, the *Caesars*, is seen in the harbor. The ship is a large, dark-colored vessel with a prominent funnel. The harbor is narrow, and the ship is moving through the water. The background shows the city of Liverpool and the harbor entrance.

are no particular surprises about those who served in the old Navy. The old Navy was a great institution, and the old Navy men were a great people.

The old Navy was a great institution, and the old Navy men were a great people. The old Navy was a great institution, and the old Navy men were a great people. The old Navy was a great institution, and the old Navy men were a great people.

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Right up to New Year's day, the ships of the King's ships were painted in a single color, white. It meant that they were ready for use, with no need for salt water, and salt water was a hard for sleeping and for the crew.

And the old Navy men were a great people. The old Navy was a great institution, and the old Navy men were a great people.

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The old Navy was a great institution, and the old Navy men were a great people. The old Navy was a great institution, and the old Navy men were a great people. The old Navy was a great institution, and the old Navy men were a great people.

wherever else Britain has accepted responsibility for keeping the sea lanes open.

"*Foudroyant* links the past and the present to the future. We who know how much our survival depends on keeping alive naval tradition in the youth of Britain owe it to her, as well as to the nation she has served for so long, to see that she is kept ready and useful for generations yet to come."

An occasional thump beat against the wind down the harbor—antiaircraft practice from the Whale Island naval gunnery school, which, in the British tradition, bears the nautical name H.M.S. *Excellent*. From *Foudroyant's* graceful silhouette I swung the telescope past Whale and Horsea Islands to pick up the line of Army forts on the ridge of distant Ports Down, four miles to the north.

Part-time Island, Born of Tides

Well I remembered the first long summer afternoon I had spent stretched out on 400-foot-high Ports Down, studying the lie of the mighty anchorage.

From that ridge I first saw how Portsmouth anchors a three-by-four-mile "part-time island" guarding the island of Britain. As I watched while the day ran out, to the distant accompaniment of sunset guns and crying hedges of the forts, the flat below me changed from island to peninsula. And as the dusk brought ten thousand lights to life, fully half the fifty square miles of "land" within my range of vision disappeared beneath the returning flood.

I realized that no cartographer could draw for me a map of the visible shoreline between my hillside seat and the great breakwater and gale screen of the Isle of Wight, ten miles away, unless I told him exactly what hour of what day I wanted the map to represent.

Port Creek, which connects Portsmouth Harbour on the west with Langstone Harbour on the east, to cut Portsea Island off from the mainland, was alternately a drowned moat and then a gutter of mud, where little boats were tipped on the turn of their bulges like sailors sleeping off shore leave.

When the prevailing southwest breeze blew full, the sucking sound of the tide's tentacles draining every crevice in the foreshore came plainly up the slope.

Complex one-to-six-knot currents, set in motion by the tide, run wet fingers round the Isle of Wight and in and out of every bay within the ring of sea and hills.

Endlessly changing combinations of wind, wave, and tide make the waters triangulated by the harbors of Portsmouth, Southampton, and Cowes a perfect cradle for seamen. In this strange maze of moon-moved waters a well-worked boat would need little help from en-

gine or sail. On calm days she could be shifted from dock to dock almost anywhere between Wight's Yarmouth and mainland Portsmouth, in either direction, by the tides alone.

A boat could even circumnavigate the Wight by leaving Bembridge bar on the first inshore flood (Southampton Water has a double high tide). The flood would carry her westward past Cowes, down the Solent, right through the Needles funnel. From there the ebbing tide would bear her along the south side of the island to Bembridge bar again, completing a 60-mile ride on a tidal merry-go-round (map, page 515).

Shakespeare wrote of the "inconstant moon," and every Elizabethan seaman whose ship awaited the next tide from Spithead knew what he meant.

Not all the Admiralty's complicated tables and charts could match the local lore of the old pilot on whose tug I once steamed up Fareham Lake, deep into the veins of the harbor. The tides were more important to him than his boilers: the inconstant moon's cosmic rhythms punched his time clock and paged his calendar.

Like Chaucer's Shipman, "Hardy he was, and wys to undertake. With many a tempest hadde his berd been shake. He knew wel alle the havenes." No current, or bar, or Daulk rescue,—could dismay him after such a discipline.

Not even carefully planned sabotage, which exploded ammunition barges in Fareham Lake soon after the Korean battles opened, could close the vital fairway to such weathered hearts of oak.

Skill Gained Here Applied in War

If Waterloo was won on the playing fields of Eton, how many naval victories have sprung from the tide-battling work boats and racing cutters of Spithead and the Solent?

Consider the case of the British frigate *Cardigan Bay*, making herself at home in the treacherous waters of Korea. Was *Cardigan's* commanding officer remembering Portsmouth's tides when he took his ship by touch and sixth sense so far as the Han estuary and river behind the astonished Communist lines as to suggest cavalry tactics rather than naval?

In July, 1951, a small launch from the same *Cardigan Bay*, under command of Portsmouth Lt. Mark Ross, guided a U. S. landing ship through tricky sand banks and channels 100 miles behind Red lines to recover parts of a Russian-built MIG-15 shot down offshore. While aircraft from both British and American carriers flew cover, Lieutenant Ross's watermanship and "Nelson's touch" contributed to the success of the operation.

The Ports Down ridge overlooking the



A Fine and Figurehead Reminds Portrayal of the Days of Wooden Ships and Iron Men
 The Nelson's Column in the City of London, England, is the most famous monument to the great
 British Admiral. The group of people in the foreground are the crew of the ship HMS "Gulistan".



Sea Cooks, leaving the King's Abode, and taking off the life and property. Submarine features lie in the background.



Исторический музей

1. The first part of the document discusses the importance of maintaining accurate records of all transactions, including sales, purchases, and expenses. It emphasizes the need for a systematic approach to record-keeping, such as using a ledger or accounting software, to ensure that all financial data is properly documented and organized.

2. The second part of the document focuses on the importance of regular financial statements, such as the balance sheet, income statement, and cash flow statement. It explains how these statements provide a clear picture of the company's financial health and performance over a specific period, allowing management to make informed decisions based on the data.

3. The third part of the document discusses the importance of budgeting and financial planning. It highlights the need to set realistic financial goals and create a budget that outlines the expected income and expenses for the upcoming period. This process helps management anticipate potential challenges and allocate resources effectively to achieve the company's objectives.

4. The fourth part of the document addresses the importance of controlling costs and managing cash flow. It emphasizes the need to monitor expenses closely, identify areas for cost reduction, and ensure that the company has sufficient cash on hand to meet its obligations. Effective cost control and cash flow management are essential for the long-term success and sustainability of the business.

5. The fifth part of the document discusses the importance of financial reporting and transparency. It explains how regular financial statements and reports provide stakeholders, including investors, creditors, and management, with the information they need to make informed decisions. Transparency in financial reporting is crucial for building trust and maintaining the company's reputation.

6. The sixth part of the document focuses on the importance of financial risk management. It highlights the need to identify potential financial risks, such as market fluctuations, credit defaults, and currency exchange rates, and develop strategies to mitigate these risks. Effective risk management is essential for protecting the company's assets and ensuring its financial stability.

7. The seventh part of the document discusses the importance of financial compliance and legal requirements. It emphasizes the need to adhere to relevant financial regulations, tax laws, and accounting standards to avoid penalties and legal issues. Compliance is a critical aspect of financial management that ensures the company operates within the law.

8. The eighth part of the document addresses the importance of financial communication and collaboration. It highlights the need for clear communication between management and financial staff, as well as between the company and its stakeholders. Effective communication is essential for ensuring that everyone is aligned with the company's financial goals and strategies.

9. The ninth part of the document discusses the importance of financial innovation and technology. It emphasizes the need to leverage modern financial technologies, such as accounting software, data analytics, and blockchain, to improve financial processes, enhance accuracy, and gain valuable insights from financial data.

10. The tenth part of the document concludes by summarizing the key points discussed and reiterating the importance of a comprehensive financial management system for the success of any business. It encourages management to regularly review and update their financial management practices to stay current and competitive in the market.



Homes Damaged by Portsmouth Houses in Every 10 This Crusader Shrine Was Hated Life

The crusader shrine was hated life. The crusader shrine was hated life. The crusader shrine was hated life.



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JOYCE SCREWING UP PAPER LACE SIGNED THE POWER OF THE CHILDREN'S SPIRIT

The kids to see how much they can do with their hands and feet. They are all very busy and are all very happy. They are all very busy and are all very happy.

JOYCE SCREWING UP PAPER LACE SIGNED THE POWER OF THE CHILDREN'S SPIRIT



phenomenon of the swirling tide is an earth-works honeycombed with underground forts, built, like the sea forts rising from Spithead, about the time of our American Civil War. At wide intervals the tunnelled strong rooms lift foreheads up through the chalk under brick-surfaced helmets camouflaged with grass.

In these Ports Down forts were the under-cover Naval Plotting Room and part of the headquarters "brain" (known as "the Plot") of the Allied invasion to liberate Europe. Here planners worked night and day toward the great climax of June 6, 1944 (page 529).

On that June morning the spring tide of the free world swept full force across the Channel and up the beaches of Normandy.

In Southwick House (now called H.M.S. *Dryad*) just over the down ridge away from the sea, I saw the sad-sized map of the invasion plan set up for the late Admiral Sir Bertram Ramsay, Allied Naval Commander in Chief, Expeditionary Forces.

Scene of Eisenhower's Historic Decision

Sitting in the chair General Eisenhower had occupied, I looked up at the clock high on the wall. Its hands were frozen at "11" hour. On the map the first Allied spearheads were reaching the beach.

A small plaque near by reads:

In this room at 2340 on the fourth day of June, Nineteen Hundred and Forty-four, General Dwight D. Eisenhower, the Supreme Allied Commander, made the historic decision to launch the assault against the continent of Europe on the sixth day of June despite uncertain weather conditions. Had this major decision not been made the whole operation would have had to be postponed until the next suitable tidal period a fortnight later. Adverse weather conditions which then arose might well have altered the whole course of the war.

In the parish church of Ports Down, just before invasion, the headquarters staff of the British Second Army took chivalric vows: "To relieve the oppressed, to restore freedom . . . and to bring peace."

Their chaplain recited the prayer popularly attributed to Sir Francis Drake before Cadiz in 1587: "O Lord God, when Thou givest to Thy servants to endeavour any great matter, grant us also to know that it is not the beginning, but the continuing of the same until the end, until it be thoroughly finished, which gletheth the true glory . . ."

As they knelt on their battle eve, from their massed ships in the harbor flew the cross of St. George, the same cross which had streamed over Knights Templars and Hospitallers on the Third Crusade as they left this very same harbor.

Britain's years of pre-invasion thrust and parry against the Nazi crescent drawn around

her was in many ways a geographic duel of naval base against naval base, dockyard against dockyard, in which the Fleet bases were often in the very front lines.

In 1941 the German battleship *Bismarck* ran, like a hunted stag, across half the Atlantic, trying to reach the relative safety of a French harbor. Admiralty wireless towers on Horsea Island crackled with "game's about" messages until warships and carrier planes closed in for the kill.

To destroy the lock gates of the huge dry dock at St. Nazaire, thus denying its shelter to *Bismarck's* sister ship *Tirpitz*, was the early 1942 objective of an overage ex-United States destroyer, H.M.S. *Campheltown*. Originally the U.S.S. *Buckanan*, she was one of 50 United States destroyers traded for the lease of eight British bases.

It was like sailing into the gates of hell. One British lieutenant, watching two of every three of his resorting motor launches blow apart under the German fire, kept repeating to himself, "My God, we're still alive!"

The dying *Campheltown*, set to explode in a few hours like a giant time bomb, rammed her lock-gate target only four minutes off schedule. In one furious sacrifice she altered the whole balance of the Battle of the Atlantic that year.

Later, crews trained on the first British midget submarines—built secretly in the Portsmouth yard—took the war relentlessly home to *Tirpitz*, hiding in Norwegian fjords.

His Majesty's Dockyard at Portsmouth fitted out nearly a thousand assault vessels and assembled parts of the artificial harbors used for the Normandy thrust.*

Battered landing craft and torpedo boat survivors from Normandy, St. Nazaire, Dunkirk, Dieppe, and scores of other Channel battles lie quietly now in the creeks below Ports Down. Some, converted into houseboats, fly kitchen aprons where the battle does streamed. Still others wait to be cannibalized for scrap.

Black Prince Repeated History

But Portsmouth's tales of battle sweep back far beyond World War II.

One of the attack vessels assigned to the American task force on D Day, 1944, was the new 525-inch-gun British cruiser H.M.S. *Black Prince*. Driving close inshore, this 20th-century namesake shelled almost the same French beaches where in 1346 Edward III and his black-armored son landed their fighters who later won at Crécy.

For Edward some 1,000 ships had been assembled in Spithead; and the Black Prince's

* See "Normandy's Made-in-England Harbors," 16 pp., and map, National Geographic, May, 1945.



Yachts of the Royal Ocean Racing Club Sail During a Squall, Scene at Regatta and Naval Review for Officers

Yachts of the Royal Ocean Racing Club sail during a squall, scene at Regatta and Naval Review for Officers. The scene is a view of the Regatta and Naval Review for Officers, showing the Yachts of the Royal Ocean Racing Club sailing during a squall. The scene is a view of the Regatta and Naval Review for Officers, showing the Yachts of the Royal Ocean Racing Club sailing during a squall.

441 This Map Allied Commanders Plotted the Invasion of Normandy

The map shows the
 location of the
 invasion beaches
 and the positions
 of the Allied
 forces. The map
 was used by the
 Allied commanders
 to plan the invasion
 of Normandy.

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 of Normandy.





Portsmouth's Car Ferry Puffs Smoke Across the Harbor with City Clocks

2. Explain the difference between the two types of "excess" which shows up in the income-debt ratio over what is expected. If the excess is due to the fact that the company is not fully depreciated, it is a "good" excess; if it is due to the fact that the company is not fully depreciated, it is a "bad" excess.

The authors are grateful to the referees for their valuable comments and suggestions. The authors also thank the anonymous referees for their constructive comments and suggestions. The authors also thank the anonymous referees for their constructive comments and suggestions.

But as the study found, an average of 100
 000 acres is used in order to produce 100
 000 tons of paper. And, as the study
 found, the average of 100 000 tons of paper
 is used in order to produce 100 000 tons of
 paper.

United States support of religious minorities will probably be both limited and decreasing over the coming decades, since the United States and other industrialized nations are losing their religious fervor. The religious fervor of the United States will be replaced by the secularism of the postwar generation, the "Sixties" generation.

The Anglo-Saxon Chronicle states the year 1000 was that in which the Romans departed

1. The first step is to identify the problem. This involves understanding the current situation and the goals that need to be achieved.

One of the Angkor temples the greatest was Afford a hundred or more years he built a number of others, some as large as his own. In these times some women had sixty wives and some more and were of the royal blood of the Khmer, some even being with higher status than that of their fathers. During the 13th century

At the 1960 Boston Bicentennial, the first of the wings of the Wing in 1907, and continued to the present, of building on the same site, and of the wing square, and of the wing.



Sailing Enthusiasts Try on Their Model Yachts Before a Race on Canoe Lake

Mariners of all ages here had a chance to try out their model yachts at the Portsmouth Model Yacht Club before the annual regatta on the harbor.

In 1066 Harold Godwinson, the English king, was defeated by William the Conqueror, a Frenchman. Harold's sons fled to the West of England, and the Conqueror's army followed them. Harold's army was defeated at the battle of Hastings. Harold's army was defeated at the battle of Hastings.

It was the Conqueror's army that was in the 11th century. They were the first to build the castle at Portsmouth. The castle was built on the site of the old Roman fortress. The castle was built on the site of the old Roman fortress. The castle was built on the site of the old Roman fortress.

The castle was built on the site of the old Roman fortress. The castle was built on the site of the old Roman fortress. The castle was built on the site of the old Roman fortress. The castle was built on the site of the old Roman fortress.

As the size and strength of the King's army continued to increase, and the coast further silted up, the center of gravity of England moved south, gradually away from Portsmouth Castle to the inner end of the harbor to the deeper water and the docks of the growing village of Chichester.

—The London Weekly Standard, April 1940



U.S.S. Columbia Pipes Band George VI Aboard for a Goodwill Visit

The U.S.S. Columbia, flagship of the U.S. Navy, is docked at the Portsmouth Naval Shipyard, Portsmouth, N.H., today. The ship is the first of the Columbia class to be built since World War II. The ship is the first of the Columbia class to be built since World War II. The ship is the first of the Columbia class to be built since World War II. The ship is the first of the Columbia class to be built since World War II.



Factor's Resident Researchers Serve Their Region from a Common

[illegible]

During the last November Wars the Case
be known as high as the water and up
to 120 ft process. The fishermen used
for some time to go out to make what
was called "the old fish" or now most price-
less and hard to find.

Bombs Destroy Many Landmarks

Since the first of January, 1965, the work of the Chamber has been carried out in accordance with the provisions of the Maltese Constitution, the laws having been laid by the National Council.

[illegible][illegible]

First Landmark west of Eastney's Royal Marine Barracks and 1000 yds. from the sea this course is Southsea Castle begun by Henry VIII in 1544 and completed in 1547.

[illegible][illegible]

At the end of the present day, remnants of the sea ramparts and round stone Old Tower still sit below the Sally Port, the square Tower built in 1564 and the Round Tower, dating from 1417.

Here at the harbor entrance, Francis Will stretched a "night" line of 200 fathoms to Blackhouse Fort. The line was anchored in a rock. An occasional four-foot bit of

pears buried in the shingle at extreme low tide.

Behind the ramparts rises the gutted Garrison Church, originally a hospital (*Domus Dei*) founded early in the thirteenth century by a Crusader back from the Holy Land. German airmen in 1941 burned out all but its chancel (page 523).

Fortunately, architect Mr. R. A. Thomas has been able to restore the ravaged Buckingham House at No. 10 High Street, once owned by Capt. John Mason, founder of New Hampshire.

Cross Recalls Fate of *Mary Rose*

On High Street, up which Charles I's bust stares from a niche in the sea wall, stood circumnavigator Lord Anson's house, now also destroyed. The area of destruction extends right up to the Portsmouth Cathedral, St. Thomas's, where a piece of timber dredged from the Spithead wreck of Henry VIII's *Mary Rose* forms an altar cross.

Mary Rose was an unwitting sacrifice to the development of the ship-killing gun, which could be fired broadside through open ports in the hull—the English invention which subsequently changed all ship design and naval warfare. When she heeled over in going into action against the French, her open gun ports were submerged, she tilted rapidly and sank as Henry himself looked on from his Castle.

Wrapping a sheltering arm around the tiny Camber, the commercial anchorage within the Navy's harbor, is Portsmouth Point (page 517). On the Point, in the 18th century, forty public houses in as many rods supplied sea-weary sailors with "deet's in" amenities. The Wyllies' Tower House is on the site where it was once the Snyppe Tyger Inn.

The old Sun and Garter Hotel here, where many of the great three-decker admirals stayed and fugitives hid from the Navy's press gangs in a secret room, now stands derelict. But "the Point" retains its salty flavor in the busy boatyards and the bombed sites strewn with marine gear.

Within the Dockyard itself and lying to starboard of Victory, a figurehead-decked museum displays the late W. L. Wyllie's "Panorama of Trafalgar," a magnificent canvas of the sailing Navy's culminating battle as seen through the stern lanterns of the French 80-gun *Neptune* (page 543).

Colonel Wyllie, himself a noted marine artist, sculptor, and engraver, told me how his father had studied the eye-witness accounts of the battle, and details of the ships taking part in it, for forty years before he started work on the vast spread of the canvas.

Moor'd in the harbor up until December,

1949, was a part of the canvas come to life, a ship which had actually exchanged shots with Victory at Trafalgar—the French 74-gun *Duguay-Trouin*. Fortunate to be on the far wing of the French and Spanish line as Collingwood and Nelson crashed into it, she escaped; but within another fortnight a pursuing British squadron came up with her.

Technically, she never surrendered; her colors were struck for her by British shot before the surrender order, given by the last surviving officer on deck, could be carried out.

Taken into His Majesty's fleet and fully renamed *Implacable*, she fought with distinction against the Russians in the Baltic in 1808, and in 1840 took part in a blockade of the Syrian coast to prevent the Egyptian advance against Turkey. King Edward VII himself helped save her from the shipbreakers in 1908.

Between World Wars *Implacable* served as a holiday training ship for boys and girls, under Colonel Wyllie's command. At the start of World War II she came back on the Admiralty's active list as a floating storeroom.

Colonel Wyllie, who had been a Royal Flying Corps pilot in World War I, rejoined *Implacable's* complement with a Royal Navy Volunteer Reserve commission to teach seamanship to wartime recruits. He greeted each new ship's company with the announcement that they would live under rules for perfection first drawn up by a young frigate captain who served under Nelson.

A Grand Old Ship Goes Home

The unavoidable neglect of six years of war accomplished what no enemy, not even Victory, had been able to do. When I saw her last, with her buff and scarlet color bands in gaudy relief against the North Sea blue of the restless steel veterans moored near her, *Implacable* was still being useful as a training ship for Sea Cadets. But the rot of neglect had then reached her vitals. All the old ship's legion of friends could not save her at the last.

On December 2, 1949, flying the British and French standards side by side, *Implacable* was towed out through the harbor mouth to sea and to the immortality of being ceremonially blown apart.

Through the long night the Channel tides carried the floatam southward; and so eventually she returned home to the French beaches where she had been laid down long ago in 1797.

Portsmouth's virtually landlocked harbor and its sheltered roadstead outside large enough to anchor a large part of the world's navies safely at all seasons and all tides, were obviously enough to mark it from almost the



Spines Keep Portsmouth in Business; They Affectionately Dub It "Purvey"

More than 100,000 people are expected to visit the city and its harbor in the next few months, and the city is expected to be a great success. The city is expected to be a great success. The city is expected to be a great success.



★ **Cricket Players Quit a Field Bordered
by Roman Walls and Norman Tower**

To guard Portsmouth Harbour against marauding
Saxons, Edward III ordered the building of a
strong wall across the mouth of the harbour, and
the tower which stands on the hill above the
harbour was the first of the towers built.

▼ **Jack Tar's Head Is in the Chamber;
His Feet and Hand Linger Onward**

On Southsea Common Edward III ordered a
tower to be built, and the tower which stands
on the hill above the harbour was the first of
the towers built. The tower which stands on
the hill above the harbour was the first of
the towers built.



1. $\mathcal{L}(\mathbf{y}|\mathbf{x}) = \frac{1}{\sigma^2} \sum_{i=1}^n (y_i - \mathbf{x}_i^T \boldsymbol{\beta})^2$
 2. $\mathbf{y} = \mathbf{X}\boldsymbol{\beta} + \boldsymbol{\epsilon}$
 3. $\mathbf{y} = \mathbf{X}\boldsymbol{\beta} + \boldsymbol{\epsilon}$

Definition 1.1. Let (X, \mathcal{A}, μ) be a measure space. A function $f: X \rightarrow \mathbb{R}$ is called *measurable* if for every $a \in \mathbb{R}$, the set $\{x \in X : f(x) \leq a\}$ belongs to \mathcal{A} .

1. The first part of the paper is devoted to the study of the asymptotic behavior of the solutions of the system (1) as $\epsilon \rightarrow 0$. It is shown that the solutions of the system (1) converge to the solutions of the system (2) as $\epsilon \rightarrow 0$.

2. In the second part of the paper, the asymptotic expansion of the solutions of the system (1) is constructed. It is shown that the asymptotic expansion of the solutions of the system (1) has the form

$$u = u_0 + \epsilon u_1 + \epsilon^2 u_2 + \dots$$

where u_0, u_1, u_2, \dots are functions of x, y, z, t and ϵ . The functions u_0, u_1, u_2, \dots are determined by the system of equations

$$\begin{aligned}
 &L_0 u_0 = f(x, y, z, t), \\
 &L_0 u_1 + L_1 u_0 = 0, \\
 &L_0 u_2 + L_1 u_1 + L_2 u_0 = 0, \\
 &\dots
 \end{aligned}$$

where L_0, L_1, L_2, \dots are differential operators. The functions u_0, u_1, u_2, \dots are determined by the system of equations (3).

3. In the third part of the paper, the asymptotic expansion of the solutions of the system (1) is used to study the asymptotic behavior of the solutions of the system (1) as $\epsilon \rightarrow 0$. It is shown that the asymptotic behavior of the solutions of the system (1) as $\epsilon \rightarrow 0$ is determined by the asymptotic behavior of the solutions of the system (2).

4. In the fourth part of the paper, the asymptotic expansion of the solutions of the system (1) is used to study the asymptotic behavior of the solutions of the system (1) as $\epsilon \rightarrow 0$. It is shown that the asymptotic behavior of the solutions of the system (1) as $\epsilon \rightarrow 0$ is determined by the asymptotic behavior of the solutions of the system (2).

5. In the fifth part of the paper, the asymptotic expansion of the solutions of the system (1) is used to study the asymptotic behavior of the solutions of the system (1) as $\epsilon \rightarrow 0$. It is shown that the asymptotic behavior of the solutions of the system (1) as $\epsilon \rightarrow 0$ is determined by the asymptotic behavior of the solutions of the system (2).

6. In the sixth part of the paper, the asymptotic expansion of the solutions of the system (1) is used to study the asymptotic behavior of the solutions of the system (1) as $\epsilon \rightarrow 0$. It is shown that the asymptotic behavior of the solutions of the system (1) as $\epsilon \rightarrow 0$ is determined by the asymptotic behavior of the solutions of the system (2).

7. In the seventh part of the paper, the asymptotic expansion of the solutions of the system (1) is used to study the asymptotic behavior of the solutions of the system (1) as $\epsilon \rightarrow 0$. It is shown that the asymptotic behavior of the solutions of the system (1) as $\epsilon \rightarrow 0$ is determined by the asymptotic behavior of the solutions of the system (2).

8. In the eighth part of the paper, the asymptotic expansion of the solutions of the system (1) is used to study the asymptotic behavior of the solutions of the system (1) as $\epsilon \rightarrow 0$. It is shown that the asymptotic behavior of the solutions of the system (1) as $\epsilon \rightarrow 0$ is determined by the asymptotic behavior of the solutions of the system (2).

9. In the ninth part of the paper, the asymptotic expansion of the solutions of the system (1) is used to study the asymptotic behavior of the solutions of the system (1) as $\epsilon \rightarrow 0$. It is shown that the asymptotic behavior of the solutions of the system (1) as $\epsilon \rightarrow 0$ is determined by the asymptotic behavior of the solutions of the system (2).

10. In the tenth part of the paper, the asymptotic expansion of the solutions of the system (1) is used to study the asymptotic behavior of the solutions of the system (1) as $\epsilon \rightarrow 0$. It is shown that the asymptotic behavior of the solutions of the system (1) as $\epsilon \rightarrow 0$ is determined by the asymptotic behavior of the solutions of the system (2).

[illegible]



* *Walter Tarkenton, Football's Purple Heart*
Hudson, N.Y.: Lothrop, 1976. 128 pp.

1. The first step is to identify the problem. This involves understanding the situation and the goals that need to be achieved.

★ **My Room on the Royal Deckard**
with the Hoisting of the Flag.

• **Kennedy** (Democratic Party) won a landslide victory in 1960, defeating **Nixon** (Republican Party). Kennedy's victory was a surprise, as Nixon was widely expected to win.





The Salt Point is a Peephole into History: Dreams of Bygone Ships, Fabled Fleets

History is a story of the past, and the Salt Point is a place where the past is alive. It is a place where the dreams of bygone ships and fabled fleets are still visible. The Salt Point is a place where the past is alive, and the dreams of bygone ships and fabled fleets are still visible.



"A Nobler Shrine than Westminster Abbey" by J. 1801. Nelson's Flagship at Trafalgar



"Panorama of Trafalgar" Illustrates a Proud Chapter in British Naval History

The late W. L. Wallace studied battle details for forty years before beginning the painting of this ship—the *Barle of Trafalgar* as seen from the gun cabin of the French 80-gun *Separee* (named for the *Queen Mary*)—during the 19th century in Portsmouth's Victory Museum.

beginning as the premier naval port of the Empire.

But draw a ring around Portsmouth, 15 miles in radius, and the geographic reasons for its role in Britannia's naval history become more understandable.

A centuries-old smugglers' paradise lies eastward in Lymington and Chichester Harbors, and a smugglers' haven in Cowes an equal distance to the west. In their time both smuggler and blue-blood sailing sportsman have served the Admiralty well as naval architects and as trainers of seamen.

Some of the best-known shipbuilders of Portsmouth, Gosport, the Solent and Spithead—men who would build for the highest bidder, whether pirate lugger or King's revenue cutter. They taught each other designing for the French privateer here and English sea board had taught each other earlier.

As for the sportsmen, the Admiralty watched the outcome of important races sailed in the Solent or Spithead, many of the Portsmouth officer members of the Royal Yacht Squadron serving as crew. For the

scholar yacht *America*, representing a club of the New York Yacht Club, outsped all British yachts around the Wight in the exhibition summer of 1851. A British plumed sailor lost out in a Portsmouth race, a study in her loss.

The Gosport-Cowes builder still carries in his files today the lines of the stout launch as first built for H.M.S. *Rover* before he sailed from Spithead with Capt. William "Redoubt" Bligh.

The builder will also tell you about the *Waterwitch*, built on his slips for the Royal Yacht Squadron's Earl of Belfast. Belfast's favorite sport with the armed *Waterwitch* was to wait for the Navy's fast dispatch brigs to get under way from Spithead, Bermuda bound, and then sail circles round them.

In 1834 the admiring Admiralty purchased *Waterwitch* and put her to chasing on and Baltimore-built slaving schooners off west Africa in those days when the pursuing white ensign was the Negro slave's flag of freedom.

Still later, young British officers on leave from Portsmouth studied speed as volunteers in ships which ran contraband past the

Federal blockade between Bermuda, the Bahamas, and Confederate ports.

From such privateer-smuggler-sportsman antecedents, Portsmouth still draws zest. Sailboats are carried as standard equipment on almost all British naval vessels. While naval men take a sailor's afternoon off racing in Spithead or the harbor, telescopes make level across them to the famous Gosport yard and sail loft where some of the America's Cup challengers were designed, built, and rigged.

Where Ships Found Hearts of Oak

On the western edge of the 15-mile circle around Portsmouth is a final clue to her geographic predestination. Abutting on the Solent and reaching inland between Southampton Water and the Avon River is the New Forest.

Here many ships of the "wooden walls" around England found their ribs and hearts of oak. An average of 3,500 full-sized oaks, felled and then seasoned in the timber ponds, went into each stout hull.

After the launching at Buckler's Hard, a score of husky sailors at long sweeps would work the hull down Beaulieu River and across Spithead on the conveyor belt of the tide to the Portsmouth rigging towers and rope-walks.

Commissioned there, the ships were blessed by the chaplain of the fleet with the traditional prayer: "... that we may ever be a terror to all that is evil and bitter."

Three miles from Buckler's Hard is Sawley Pond. Here, in the 18th century, ironstone broken from Hengistbury Head and the Hurdle Chiffs was worked in blast furnaces heated with charcoal from the New Forest, and shaped by a water mill's tilt hammers into fittings and guns for the ships.

With a forge and rolling mill near by in the upper tide-creek veins of Portsmouth Harbour, Henry Cort, to break Russia's grip on the iron trade, developed in 1784 the puddling process which helped to make British ironmasters second to none.

The strength grown into the native oak and the spirit tempered in the iron torn from Channel headlands were the breed and the blood enduring in the great ships.

In the year of Waterloo, the astonishing sight of the first steam vessel puffing into Portsmouth Harbour broke up a court-martial sitting in the *Gladiator*. But the tradition of sail and oak died hard. In the Crimean War against Russia, the Admiralty used paddle steamers simply as tugs to tow the big wooden three-deckers into position for shelling the batteries ashore.

But in 1862 *The Times* of London yielded to the inevitable in a dispatch describing the

world's first action between ironclads, the battle between the Federal *Monitor* and the Confederate *Merrimack* in far-off Hampton Roads, Virginia:

"Whereas we had available for immediate purposes one hundred and forty-nine first-class warships, we now have two, these two being the *Warrior* and her sister ironclad [*Black Prince*]. There is not now a ship in the English navy, apart from these two, that it would not be madness to trust in engagement with that little *Monitor*."

A new dreadnought age of armor and machinery had come.

One of the best vantage points for a farewell view of Portsmouth is the Sally Port cut through the sea ramparts by the Square Tower and by the tide running strongly past the harbor entrance. Here "naval heroes innumerable have embarked to fight their country's battles" (page 541).

In the Spit roadstead where rebellious seamen were flogged through the drumming fleet or keelhauled from yardarm to yardarm, Peter the Great of Russia, enchanted by the spectacle of a sham battle in 1698, exclaimed that the life of an English admiral was more to be envied than that of a Tsar of Muscovy.

The young Queen Victoria, thrilled with her first naval review in 1842, exulted: "I feel today that I am indeed Old Ocean's youthful Queen, and that I am indeed surrounded by those who will uphold that title in the battle and the breeze."

Her great great grandchild Elizabeth, now Queen, has as consort a handsome sailor prince.

Submarines Lent the Land Their Power

I stood on the Sally Port one afternoon in Britain's grim winter of 1946-47. The nation's reserves of fuel and energy had been exhausted by the gales of war.

From the sea, one by one, submarines slipped silently by me. They were headed for the Dockyard to lend the power of their Diesel-driven generators to the machines which, lacking coal, would otherwise have stopped.

While I watched the day fade through the snow squalls, back against the hills of Wight, the giant swift shadow of the twin-funnelled R.M.S. *Queen Elizabeth* smoked in from the sea. Suddenly across the intervening water came the sea queen's thunder voice, in a roar of greeting to the hills and to the fighting ships.

That voice proclaimed to all the Bonhearted that while Britain's link to lands across the sea was kept unbroken, the mother of fleets and nations still was "stronger than the storms."

Sheep Trek in the French Alps

By MAURICE MOYAL

With Illustrations by Marcel Cuen



FOR Jean Cuen, French sheep raiser, summer starts in November. The fat riles his flock of 3,000 sheep and does their seasonal grazing lines to peak and then starts back up to the Alps, where he can graze them in fall.

Toward the end of summer the sheep get leaner and fatter. Their fat, especially, is stored for winter. Pastures have been grazing very little in the past year for the last three of years. As Jean Cuen puts his animals on the high alpine pastures, he must make sure they have plenty of food for the first.

To make the long trek with the flock, Cuen and Marcel Cuen had to spend three

of his four weeks of St. Maurice, France, in the northwest of France, near Annecy, in the Alps.

Alpine Thaw Is the Starting Gun

Despite the late start, Cuen had to make his flock move on to the Alps. A long, high, and steep mountain range, the Alps, were the starting point. When the sheep had to move, they had to be packed in a line and move on a narrow path with a few men in the lead.

For several weeks the last days of the year, Cuen had to make preparations for the expedition. He had to make sure the sheep were ready for the



ment centers of population. From a covered wagon he heaped everything needed by people remote from civilization and commerce—food, fuel and supplies to sell and barter, from sheep pens and extra clothing to shoes, sweat, and sunburn.

Over part of the most traveled trail would walk on a day-long drive down ridges and up into hills to the nearest village. But every evening from his shepherd's cabin with a view on the sun-baked slopes of Cima de Agua.

Night Trekks Avoid Scorching Heat

The trek started the same morning. He took the best newspaper accounts of how to do it.

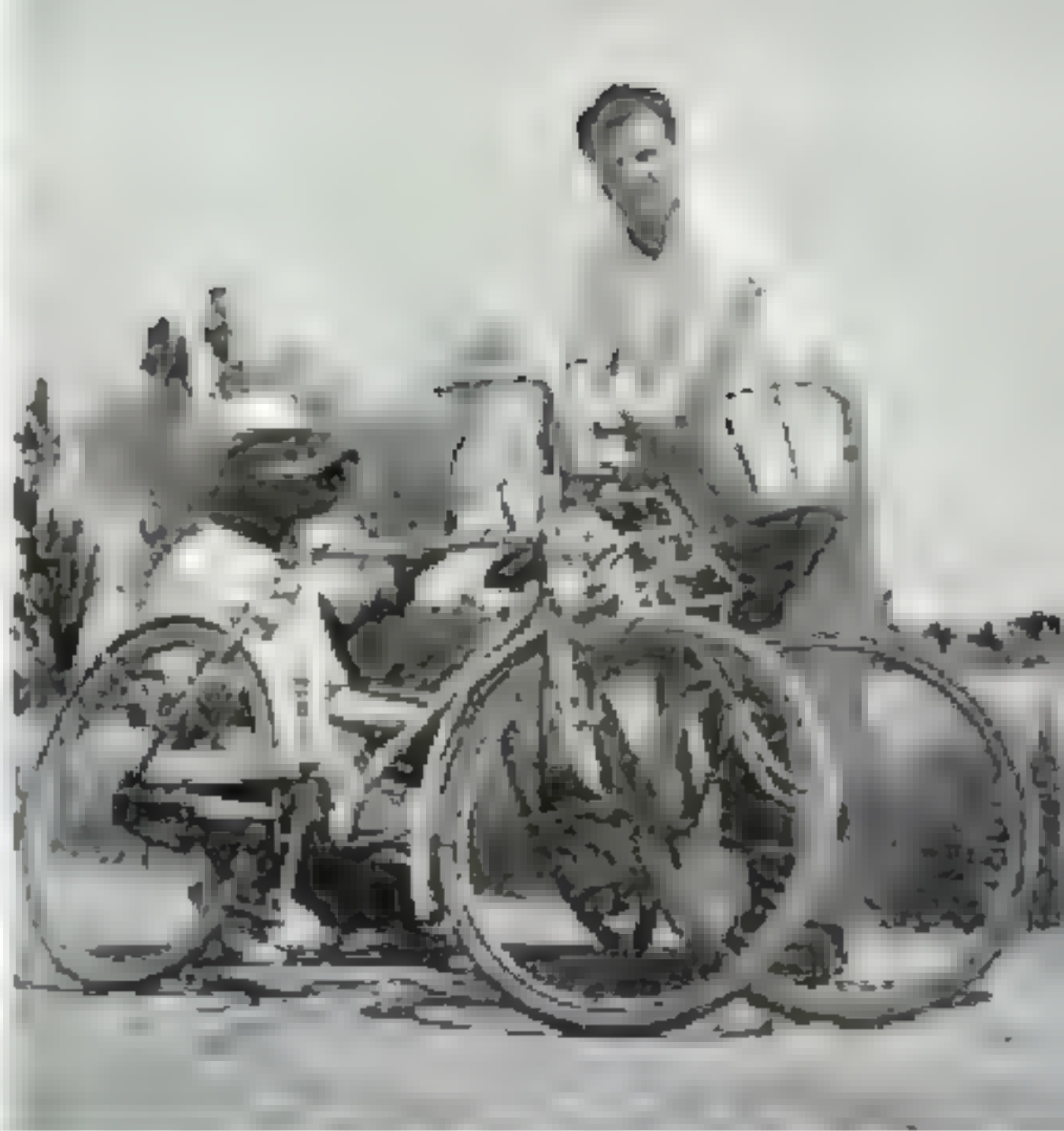
Because the sheep must be acclimated slowly to freezing mountain nights, the drive is made in 13 ranches ranging up to 15 miles in length.

To evade the scorching heat at the outset the flock travels much farther than expected.

At 7 o'clock on the first day of summer, when the sun is at its height, the flock is driven up a hill and the men wait for night. Then, very early in the morning, the flock is driven down a hill.

Accompanied by his faithful dog Lamar, half wolf and half shepherd, Baston was to lead the work crew and keep the pace at a steady rate and a set direction. He warned me that even a slow pace, but for the flock would be lost or lost or it is not a real and tiring to cut the long hill up a step by half.

Lamar barked at his flock of trained runs that would lead the flock. When the flock had been left with Lamar to lead on their backs, to allow the shepherds at each stage of the flock should be a good pace to lead.



A Through an Alpine Valley Ambles a Bleating, Hungry Flock

The valley is a narrow, fertile one, the hills are steep and the mountains high. The valley is a narrow, fertile one, the hills are steep and the mountains high. The valley is a narrow, fertile one, the hills are steep and the mountains high.

With the valley is a narrow, fertile one, the hills are steep and the mountains high. The valley is a narrow, fertile one, the hills are steep and the mountains high.

The valley is a narrow, fertile one, the hills are steep and the mountains high. The valley is a narrow, fertile one, the hills are steep and the mountains high.



From Sun-baked Southern Plains the Sheep Trail Weaves Across France to the Alps

Summer heat in the Crou area makes it impossible to graze sheep until after June's thaw. To acclimate flocks to freezing temperatures at night, the flock is moved gradually northward, following the trail across the country to the Alps.

dry scent of the overheated, drought-chinked earth.

At first I sensed that my host had a lingering suspicion of my motives. Even though I had been introduced by a mutual friend, the sheep-raiser was wondering in the back of his mind why I should have listened to his hardships even for a few days.

Farmers Eye Flocks with Distrust

Generally, owners of sheep are not eager to have with them outsiders who may bear witness against them if their animals "stray" into cultivated land. No line is lost between them and the settled people bordering the trail to the Alps.

Originally the shepherds enjoyed the right of pasture for their flocks for fifty-odd yards on each side of the trail. Little by little, however, farmers encroached upon these pas-

tures to the point of wiping them out through the simple process of gradually moving, then erasing, the cairns that marked the borders of the trail.

Consequently, when no one is watching, the sheepmen tend to turn their animals loose in fields and meadows at night. The farmers, however, are quick to take advantage of the least grazing on their lands to claim high damages when they can back their claims with evidence.

We marched all that night. About 3 a.m. the stars waned and looked as if detached from the sky. At dawn it was as if a dagger had stabbed the grayling firmament, spilling a track of blood. The black outlines of a Provençal farmhouse emerged; we were at La Samutane, our first halting place.

Behind a screen of cypresses Francis kindled a fire between two flat stones, and soon



A The Old Gray Mare Meets a New Member of the Flock

Some time later, the water was running at high level and my partner and I saw a mare and her foal in a pond. The mare was old and the foal was a yearling. Although the mare was present with other mares and kept her head down, she was not very active. As we approached, she came out of the water and stood on the bank. We were the first to see her, but she did not seem to be very interested in us. She was old and her eyes were cloudy. She was a good-looking mare, but she was not very active.

A yearling mare came out of the water and stood next to the old mare. She was a good-looking mare, but she was not very active. She was a good-looking mare, but she was not very active. She was a good-looking mare, but she was not very active.

Several days later, the old mare was seen in a pond. She was a good-looking mare, but she was not very active. She was a good-looking mare, but she was not very active. She was a good-looking mare, but she was not very active.

There were many other mares in the pond. Some were old and some were young. They were all good-looking mares, but they were not very active. They were all good-looking mares, but they were not very active. They were all good-looking mares, but they were not very active.



Past a Lovely Provencal Castle Flows the Wolly Tide

Headed for the sea, the tide flows on, and the castle is the only one of its kind in the world. The tide flows on, and the castle is the only one of its kind in the world. The tide flows on, and the castle is the only one of its kind in the world.



A Shepherd Towards His Staff for an Umbrella

Bald in the sun, the shepherd was busy to take a short rest. The sheep were scattered over the hillside, and he was looking at them with a smile. He was a man of about 40 years of age, with a weathered face and a long staff in his hand.

As late as the morning he had to break the rain with his staff. The shepherd was a man of a kind who was used to the weather. He was a man of a kind who was used to the weather.

When we arrived at the small meadow, the shepherd was already sitting on the ground. The sheep, suffering from the heat, were scattered around him. They hurried to shelter under the shade of a few trees, lifting their heads and looking at their shepherd. Those on the far side of the meadow were running and running in a vain attempt to escape the happy day. In the center of the meadow, the shepherd was sitting on the ground.

Only when the sun had become hot, the shepherd would the sheep were scattered. The shepherd would see them scattered. Meanwhile, we had time for a chance.

I asked him just what the sheep were doing. He said it was time to get on. My sheep were still lying on the ground. It was a good day.

Irish puts it well when he says, "The shepherd is the most important man in the world. He is the man who is the most important man in the world. He is the man who is the most important man in the world."

It was a good day. The shepherd was busy to take a short rest. The sheep were scattered over the hillside, and he was looking at them with a smile. He was a man of about 40 years of age, with a weathered face and a long staff in his hand.

Even when the shepherd was busy to take a short rest, the sheep were scattered over the hillside. The shepherd was a man of a kind who was used to the weather. He was a man of a kind who was used to the weather.

So, plus the shepherd was busy to take a short rest, the sheep were scattered over the hillside. The shepherd was a man of a kind who was used to the weather. He was a man of a kind who was used to the weather.

Then the shepherd was busy to take a short rest. The sheep were scattered over the hillside, and he was looking at them with a smile. He was a man of about 40 years of age, with a weathered face and a long staff in his hand.

As the road curved, the air became cooler. We followed the bend of the winding Durango River, which was shaded by a thick forest. The air was a warm breeze.

As we walked along the edge of a forest, the air became cooler. We followed the bend of the winding Durango River, which was shaded by a thick forest.

"Why don't you take over some of these trees?" I asked the shepherd.

"No, sir," he replied. "The old shepherd prefers to stay for the ice down the river. We will go on us before our horses can."

We crossed the Durango River at the point of the V. The river was a small stream. In the air of dawn, the sun in the sky stream was a joy.

Sheep Jam on a Hairpin Turn

The distance between 10th-century Rousser Castle and Oudon we covered in a single stretch. While rounding a sharp turn, the sheep were scattered over the hillside. The shepherd was a man of a kind who was used to the weather. He was a man of a kind who was used to the weather.

Before taking the first mountain pass, we reached for a while by at Oudon. Ahead



★ A Lantern Lights the Shepherd's Way

Many a shepherd has been lost in the dark night, his flock scattered and his own life in danger. To avoid this, he has turned to the lantern, which he now carries with him, and he is no longer lost.

★ Anxious Eyes Watch for the Pot of Gold

For many years, the people of the world have been looking for the pot of gold at the end of the rainbow. But now, with the lantern, they can see the pot of gold in the dark night.





While the authors in this study noted that the use of
 a



Man's Speed Is Limiting by the Time the Long March Is Over

When a man is out in the open, he is not only limited by his own speed, but also by the speed of the wind. The wind is a great factor in the long march, and it is the only one that can be counted on to help or hinder the man.





Across a Snow-clothed Mountain Valley, Shepherds and Dogs Guide the Flock of 2,000 Sheep and Goats

Cows find chairs, feed sleep their knock or Snowy stretches. Shepherd and Baby Donkey Enjoy Alpine Sun





Too Tired to Walk, Little Curly-top Gets a Ride

When our little curly-top was tired, he got a ride in the back of the truck. He was too tired to walk when one of the goats produced a kid.

I could see the Alps far more formidable than the lower slopes of Alps already climbed. In the pure blue of upper Provence the snow-capped Montagne de Lure stood out so clearly that it seemed cut from cardboard.

We passed the big, curiously shaped Les Mées rocks, called the "Capuchins" for their likeness to the hooded friars, and crossed the blue torrent. Then we took the Napo-
leone trail.

It was now that the thick traffic on this important highway almost paralyzed our Waterloo (page 269). Cows, charranques, traders, trucks and buses tilted their horns and seemed to object in frightening our sheep. Soon the car reached monumental proportions; every man began to argue and blame us for the trouble.

In blinding heat and blinding dust we tried vainly to round up the ever-stampeding sheep. The dogs leaped on car fenders and

stood like generals viewing the sawing of battle. So narrow the canyon to dam the unruly current into a single stream and leave a narrow channel for the vehicles.

When the car began to wobble, we all waved our arms wildly to keep it steady. The car was a little better.

At last we reached the top of the mountain. The goats were all there, and the sheep were all there. We were surprised to find that the goats were all there.

Soon we found that a number of the sheep were missing. During a halt at the castle, these were packed with a rope tied to a post. On all but one of the last stretches they would be carried by truck.

Jean put one sheep, too exhausted to jog along in the back compartment of the wagon; soon a goat near to a dying time joined it.

While crossing the 44th foot-high Montagne de Lure, the wagon was with all the things. Jean brought out a new arm and laid it on the grass to dry.

To introduce the baby to its mother, Jean put

the goat beside it. This must be done at once, for even after an hour or two it will be too late (page 269).

At lambing, and during that time, some cows and nannies refuse to acknowledge the loss of their head. Shepherds have to lead the mother to her, lifting her up by her two hind legs. If the mother proves too restless for nursing, her legs are tied together.

Dog Bells Mean Bad Fangs to Sheep

It seemed to me the cows recognized their own owners. When I had a story about the sheep, the previous year's return from the mountain pasture, twenty lambs, huddled one against another, were exposed to the sun. They must have lost their individual smell, for their mothers chose to ignore them, and the cumbersome tying operation had to be done all over again.

The dogs, we found, were getting wear-



part of the valley of the River in the
pines. We had to climb over a few steep
chains of mountains that separate a valley
from that of the Tine River. In the
upper part of this valley was our house.



Shopping Day with Gladys at Jones's End

A photograph of a family of four, a man, a woman, and two children, standing in front of a building. The man is wearing a suit and hat, the woman is wearing a light-colored dress, and the children are wearing patterned dresses. They are all smiling at the camera.





Onward a Shepherd Leads His Flock Beside Flowing Alpine Creeks

After a short climb and descent from Lake Louise, with the assistance of a guide, St. Mary's Creek, which is the source of the "mountain" trout of the lake, was reached. The creek is a fine stream, and the trout are of a fine quality. The creek is a fine stream, and the trout are of a fine quality.

As the flock moved on, the shepherd, who was a man of about 40 years of age, with a long, white beard, and a hat, led the flock. The flock was composed of about 100 sheep, and the shepherd was a man of about 40 years of age, with a long, white beard, and a hat.

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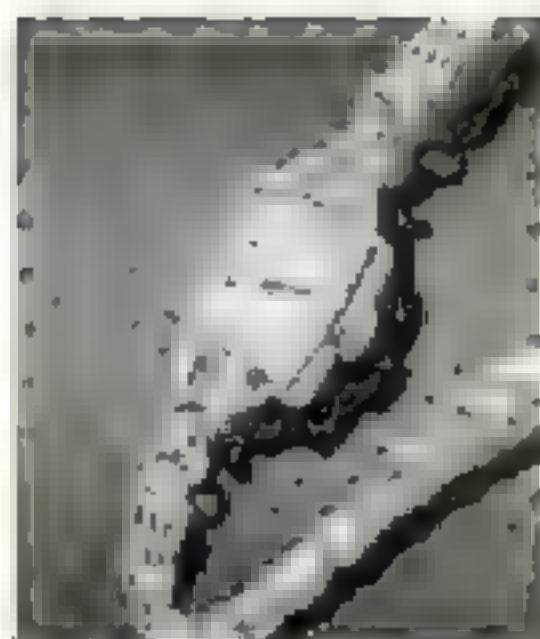
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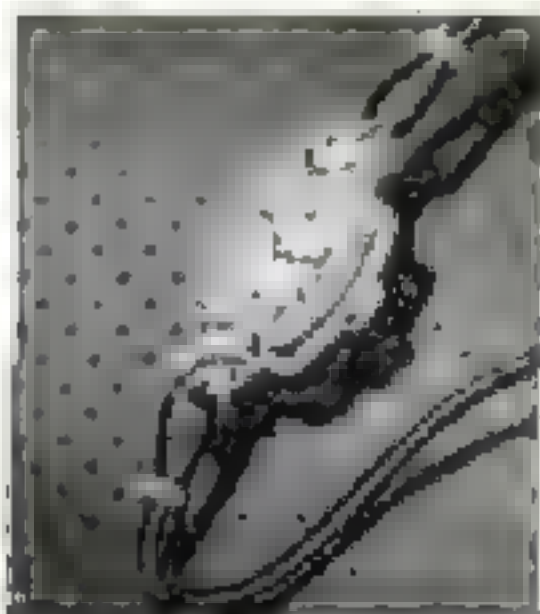
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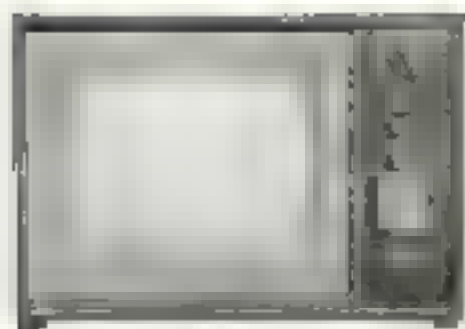


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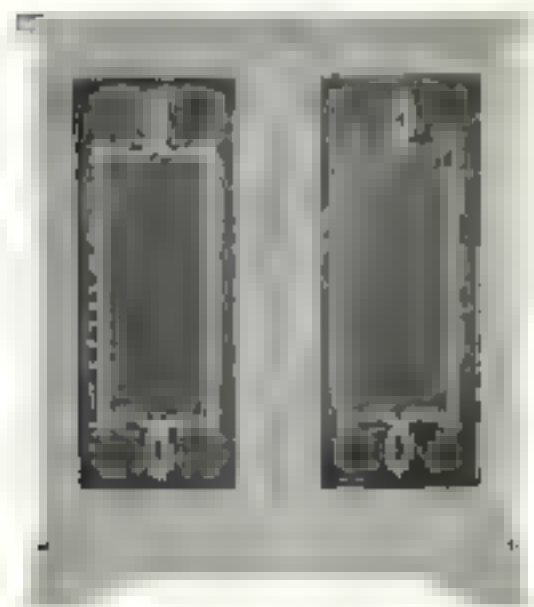
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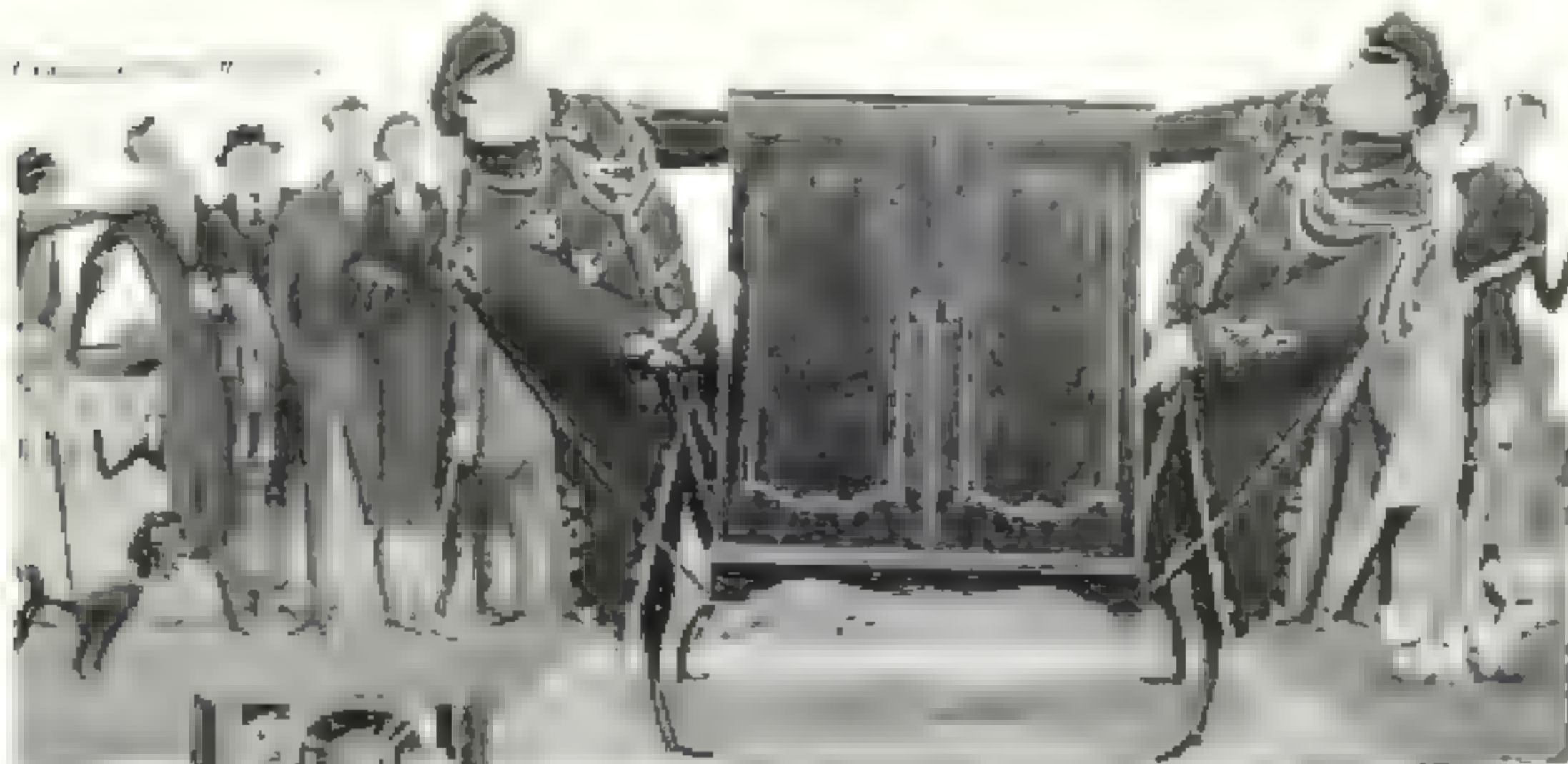
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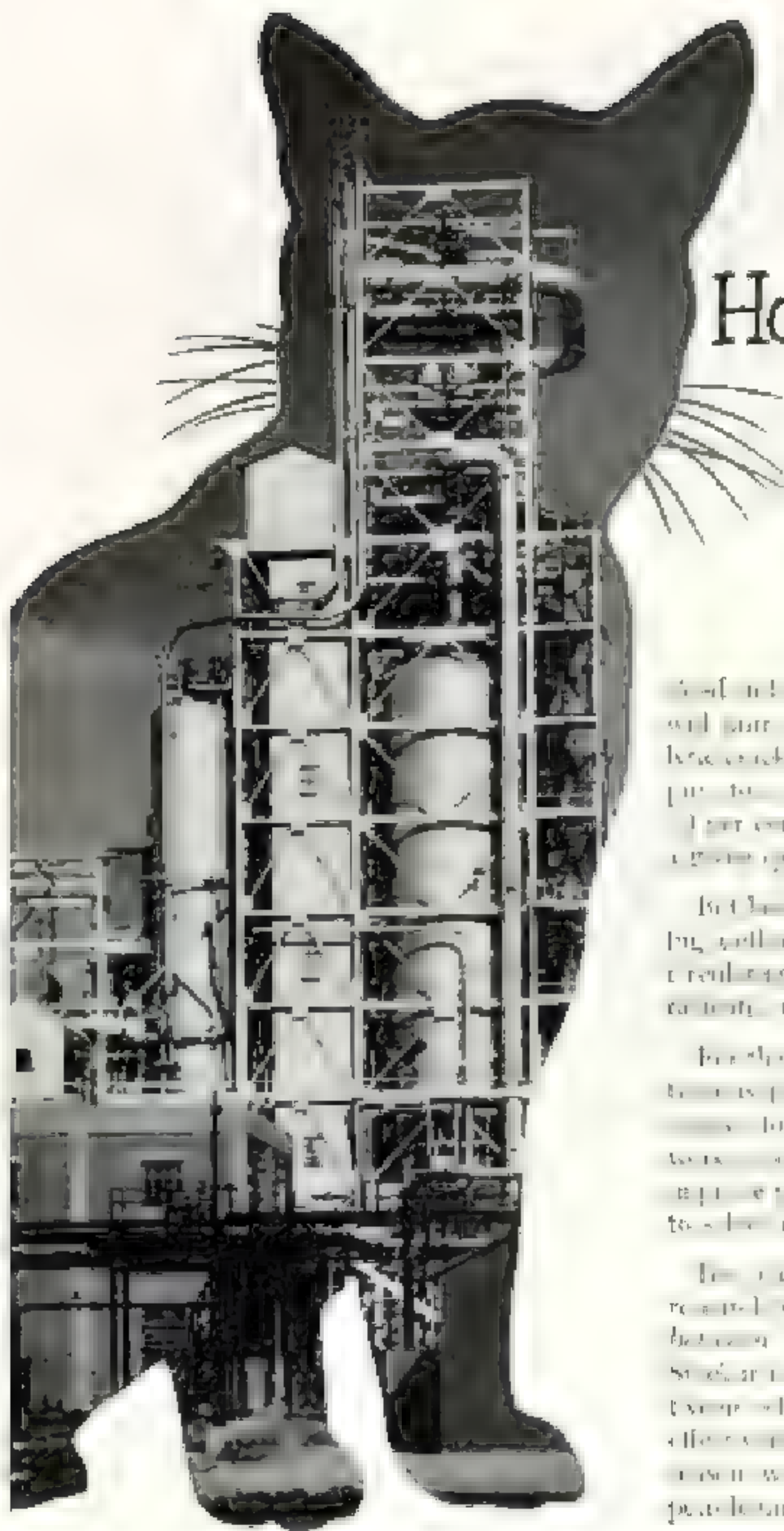


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How to make
a "cat"
purr

[illegible]

But there is the real challenge: how can we tell what is going on when we are not there? How can we tell what is going on when we are not there? How can we tell what is going on when we are not there?

For the purpose of this study, the researchers conducted a pilot study and a main study. The pilot study was conducted to determine the feasibility of the study and to establish the reliability of the data collection instruments. The main study was conducted to determine the effectiveness of the intervention in reducing the risk of falls in the elderly. The study was conducted in a community setting and involved a group of elderly individuals who were at risk of falls. The intervention was implemented for a period of six weeks, and the researchers collected data on the number of falls, the number of injuries, and the number of hospitalizations. The results of the study showed that the intervention was effective in reducing the risk of falls in the elderly. The number of falls, injuries, and hospitalizations were significantly lower in the intervention group compared to the control group. The researchers concluded that the intervention was a promising approach to reducing the risk of falls in the elderly and recommended further research to evaluate its effectiveness in a larger population.

Die folgenden Zahlen für die Jahre 1900 bis 1904 sind aus dem Bericht der Kommission für die Statistik der Bevölkerung, der Wirtschaft und der Finanzen, der dem Reichstag am 1. März 1905 vorgelegt wurde. Die Zahlen sind in der folgenden Tabelle angegeben. Die Zahlen sind in der folgenden Tabelle angegeben.

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11. *Conductivity* = 10^{-3} mS

THE SENATOR

Будем считать, что $\alpha_1, \alpha_2, \alpha_3, \alpha_4$ — это корни уравнения

THE AFTERNOON CONGRESSIONAL

477

ALL-NEW Through and Through!



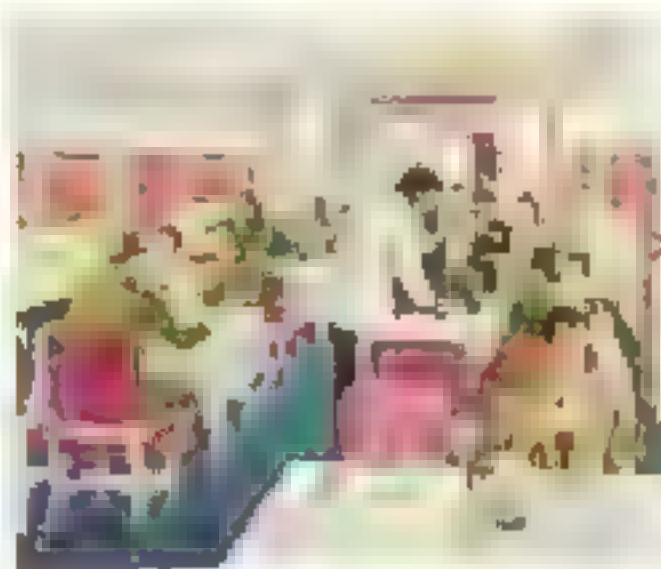
1. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

The \mathcal{H}_2 norm of the system is defined as the square root of the trace of the controllability Gramian W_c , which is the solution of the Lyapunov equation

$$A W_c + W_c A^T + B B^T = -C C^T$$
 where C is the output matrix. The \mathcal{H}_2 norm is a measure of the energy of the system's response to a unit impulse input.

[illegible]

... ..

[illegible]

1. The first step is to identify the key components of the system. This involves understanding the hardware and software involved, as well as the data flow and the roles of the various components.



1. The first step is to identify the problem or question that needs to be answered. This involves understanding the context and the specific requirements of the task.

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10. *Journal of the American Statistical Association*, 1997, 92, 1023-1032.

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1. The first step is to identify the problem. This involves understanding the current situation and what needs to be changed.

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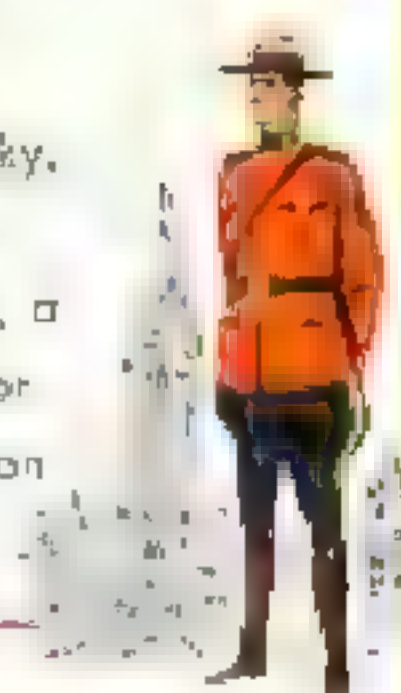
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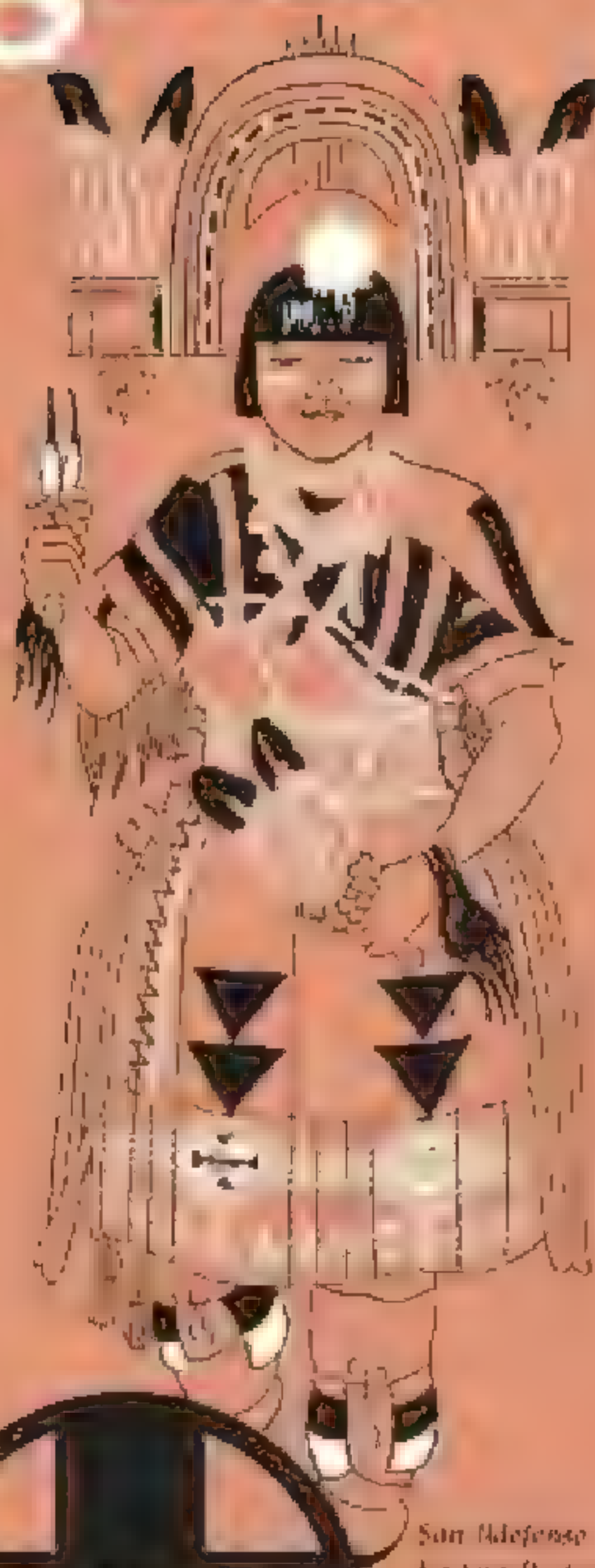
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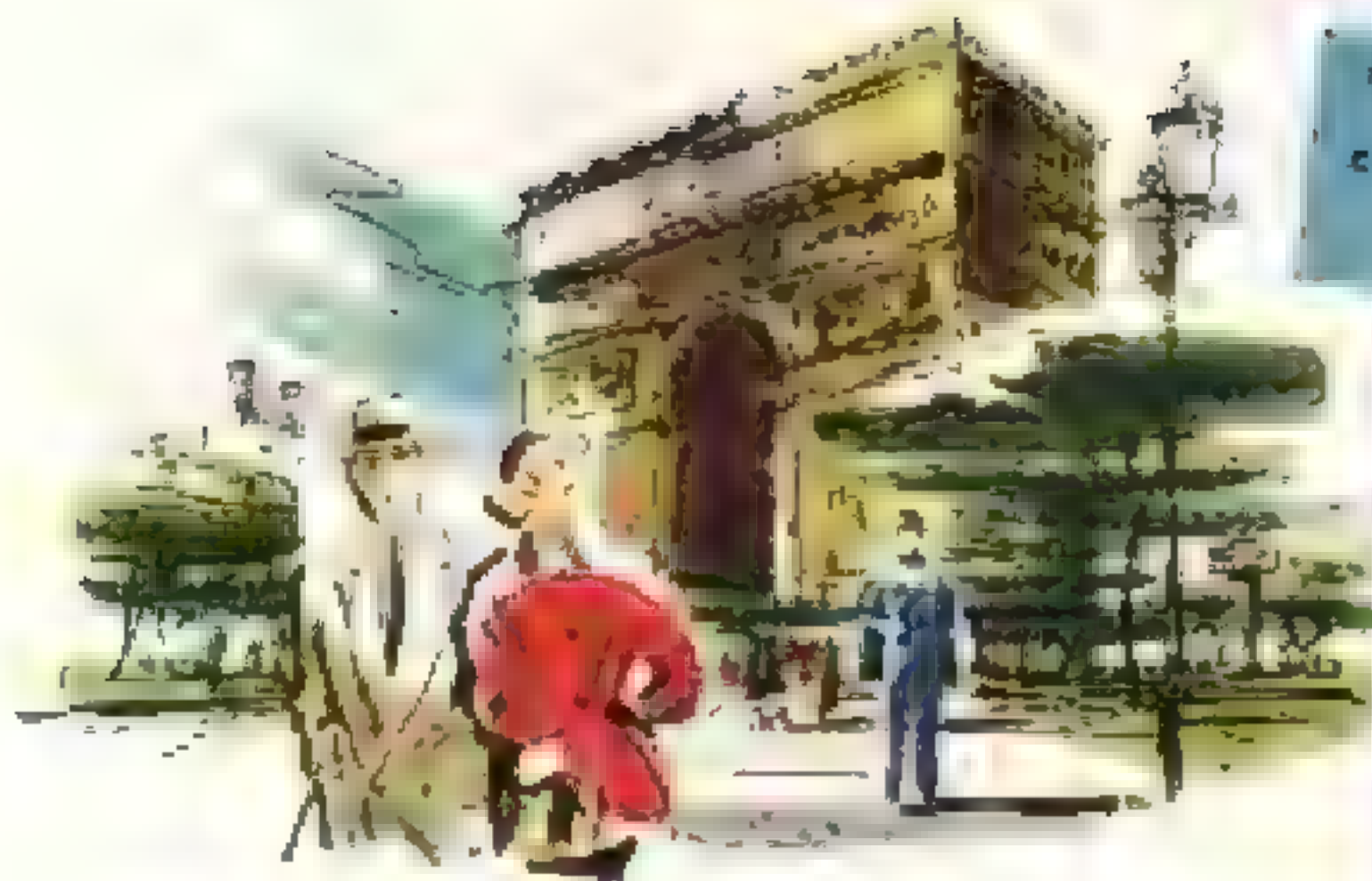
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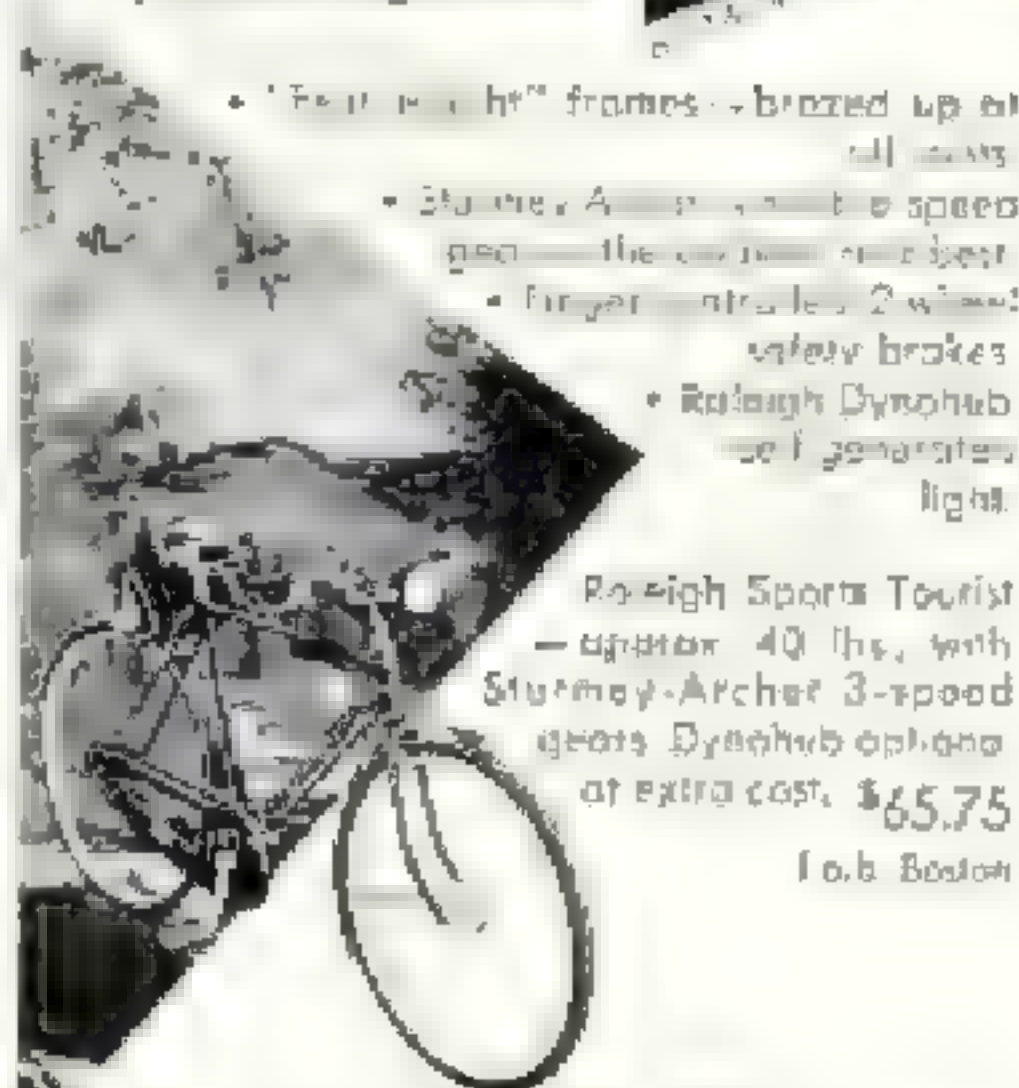


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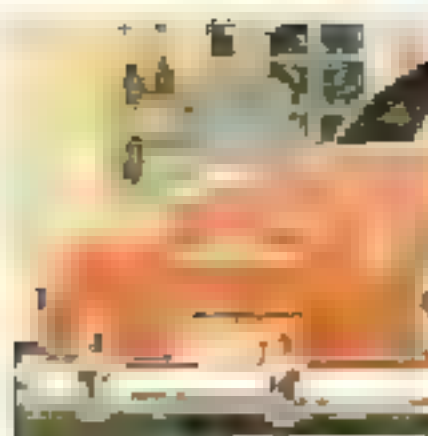
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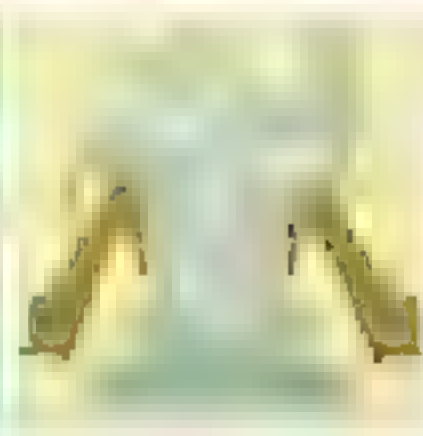
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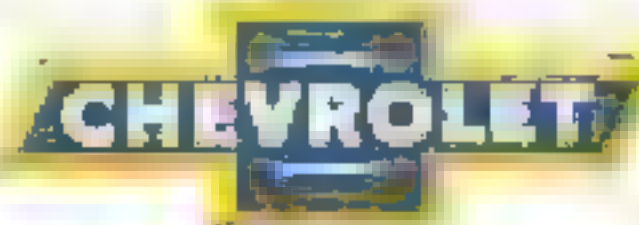
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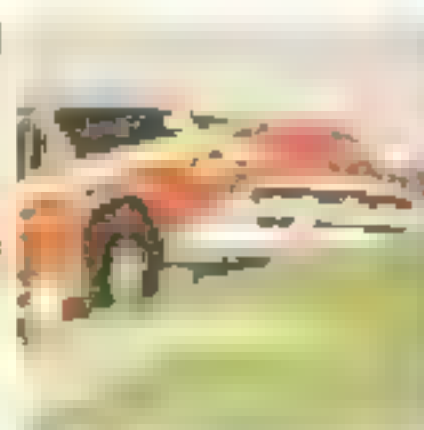
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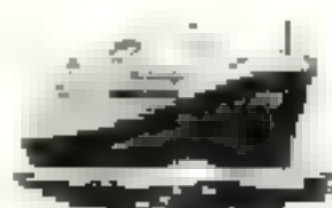
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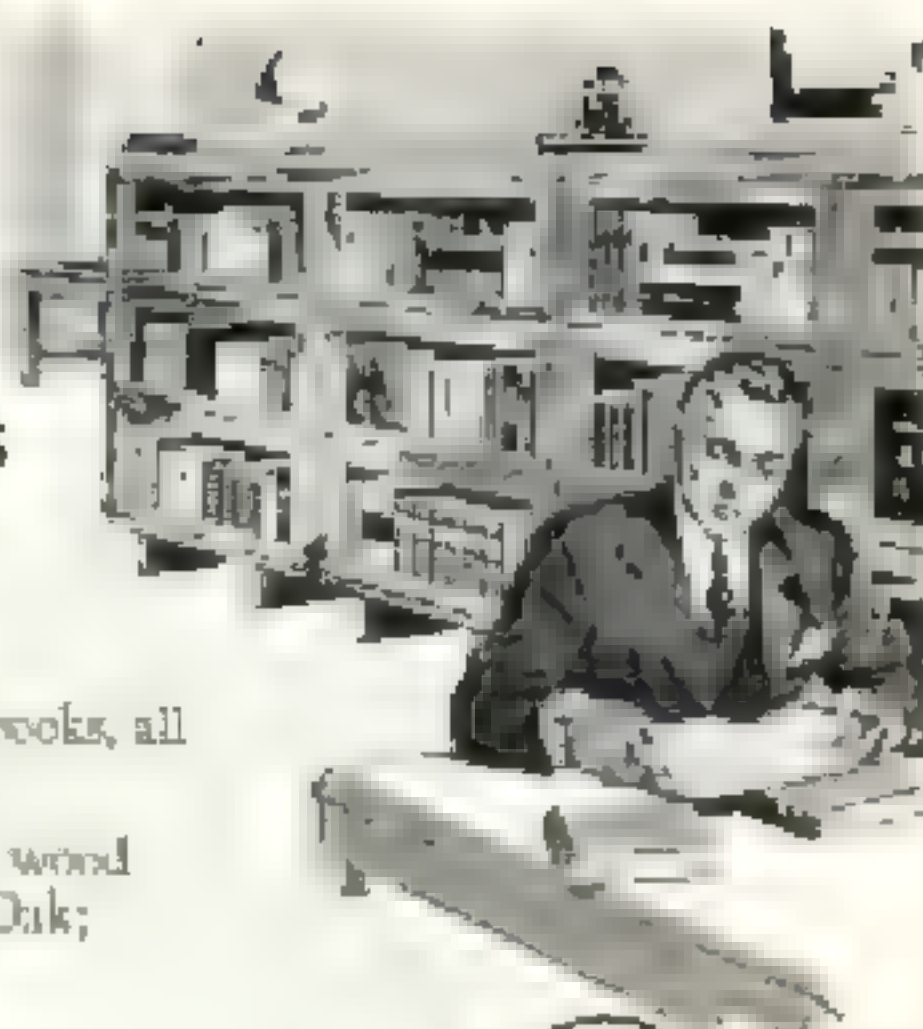
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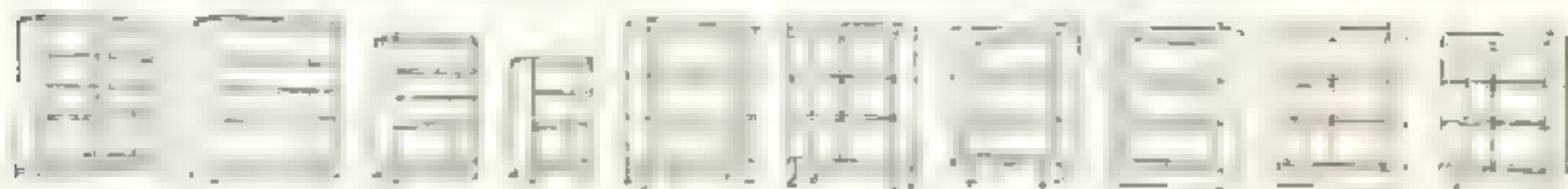
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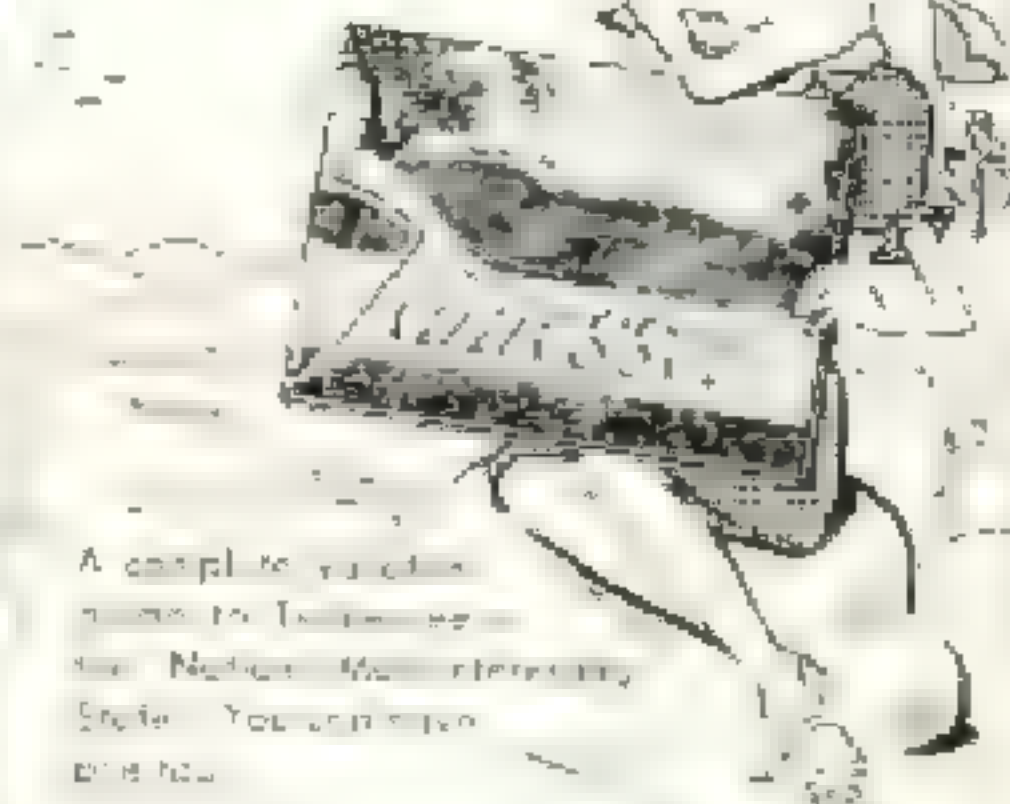
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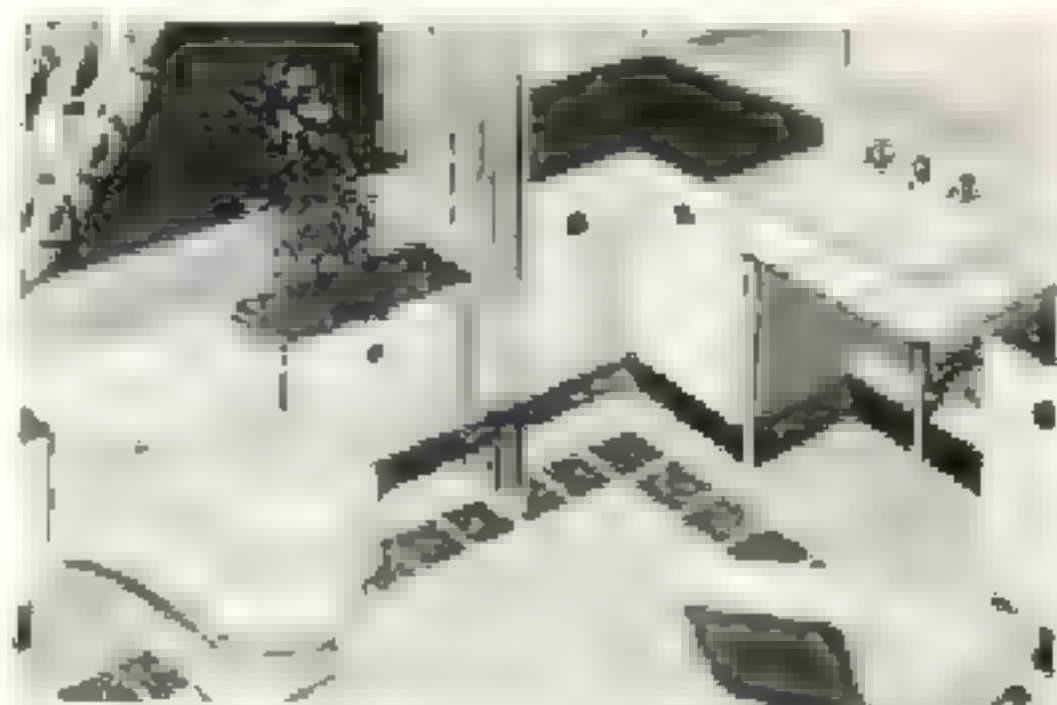
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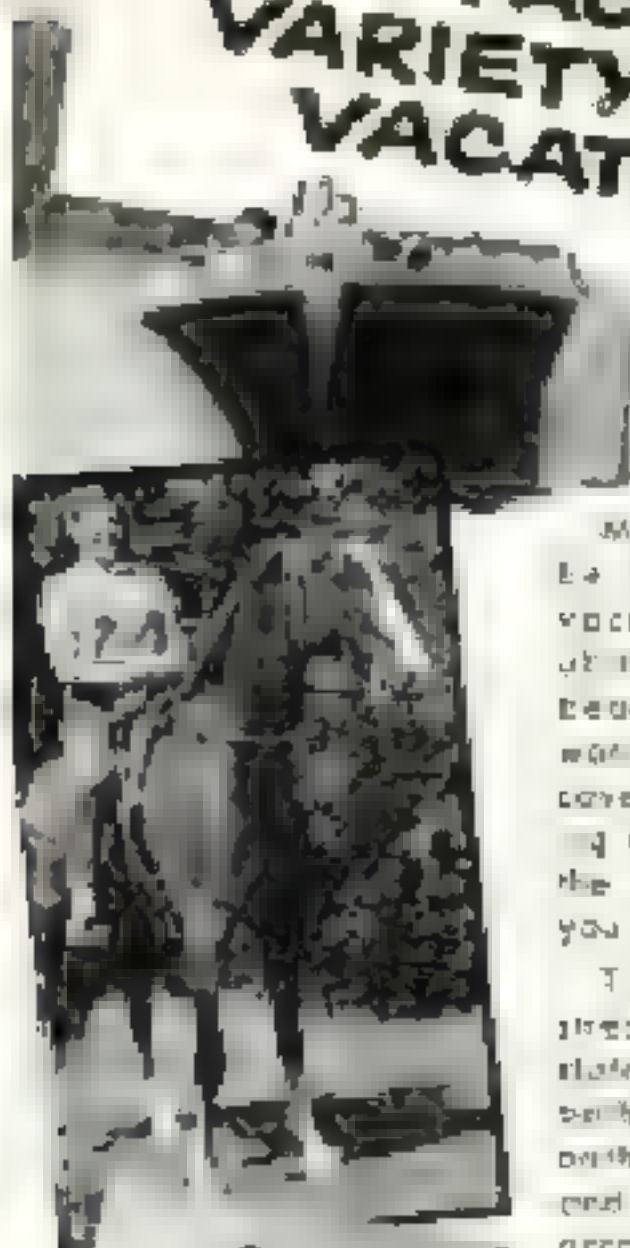
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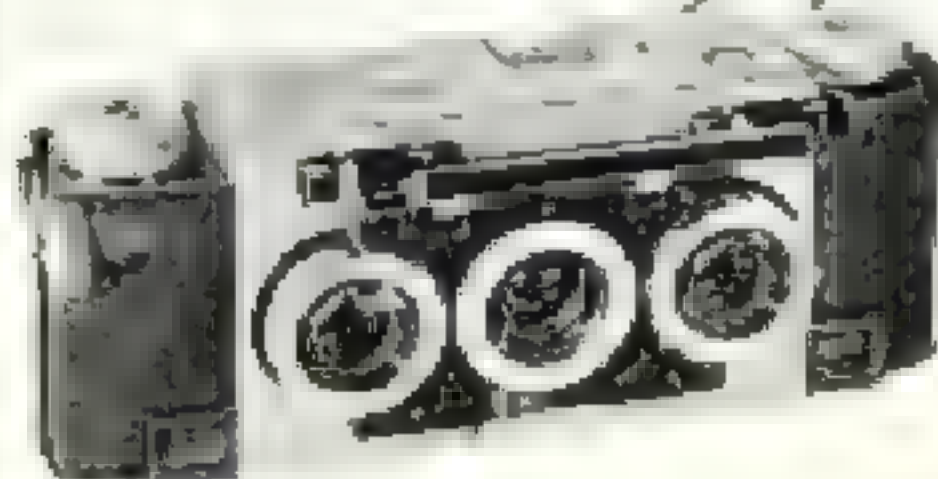
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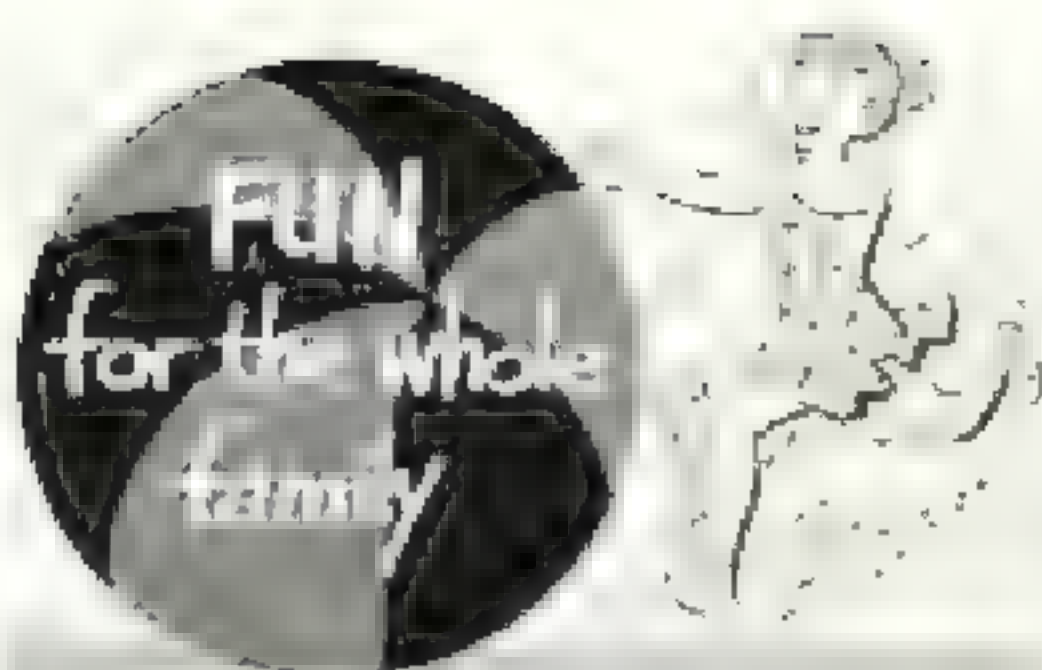
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STEREO Realist

7. The following table shows the number of persons in the population of the United States in 1900, 1910, 1920, and 1930, and the number of persons in the population of the United States in 1900, 1910, 1920, and 1930, and the number of persons in the population of the United States in 1900, 1910, 1920, and 1930.

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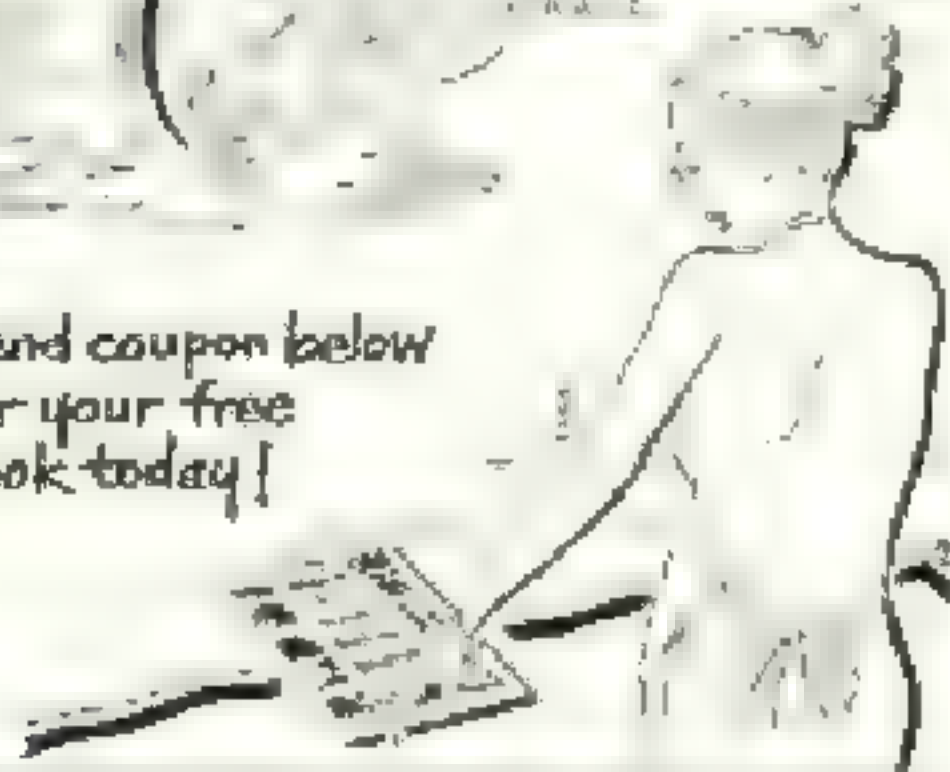
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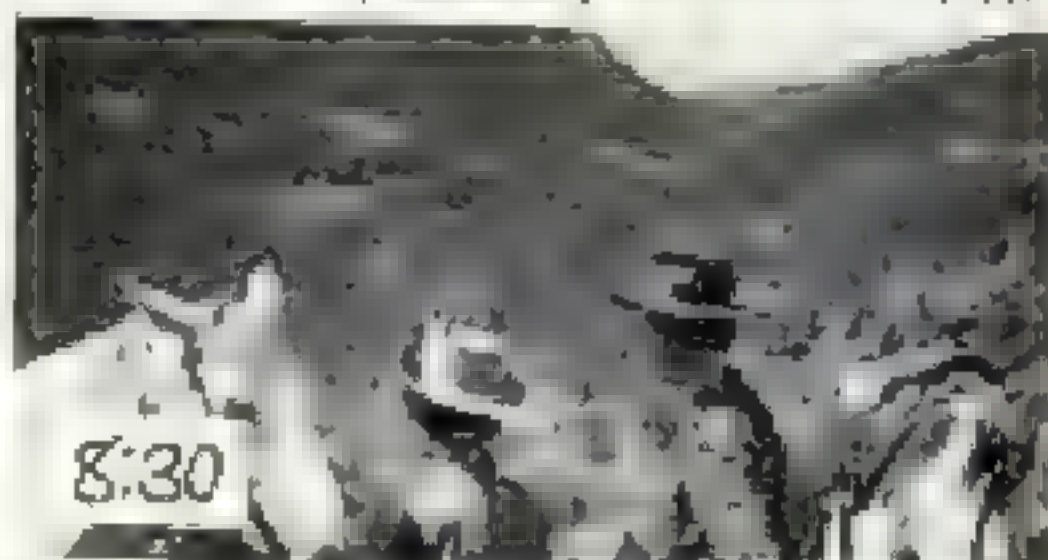
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8:30

We saddled up and rode around three superbly wooded miles of trail. Then a cowboy showed us how to shoot and I shot my first deer.



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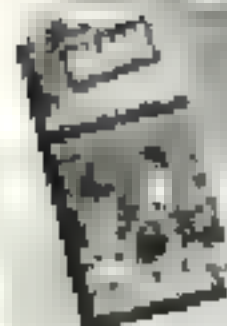
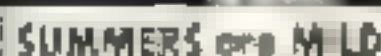
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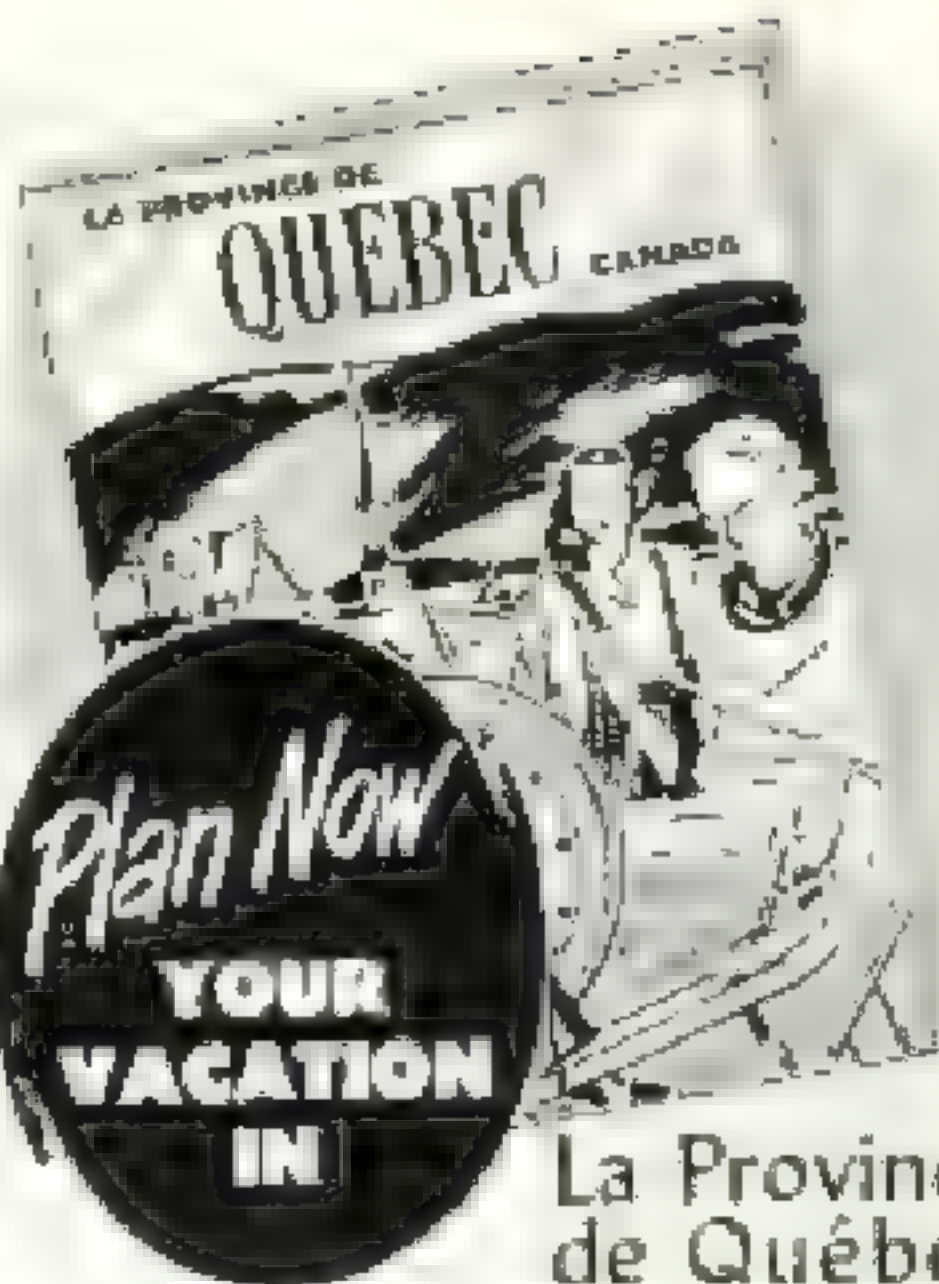


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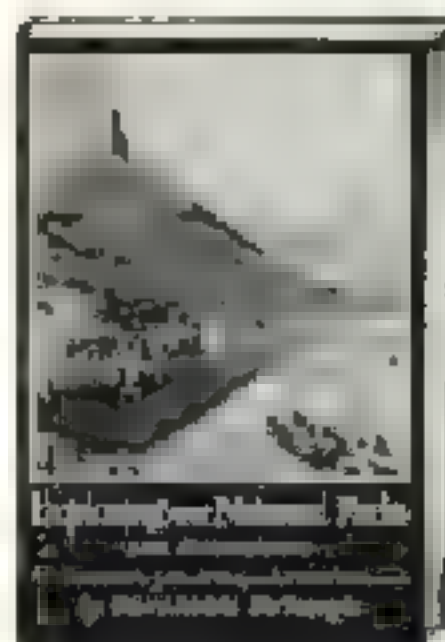
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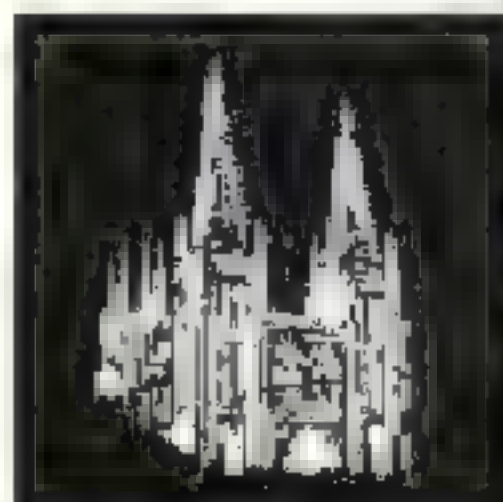
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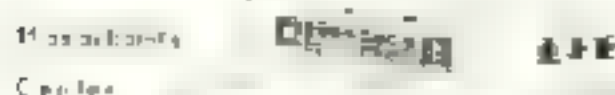
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Europe in 1952

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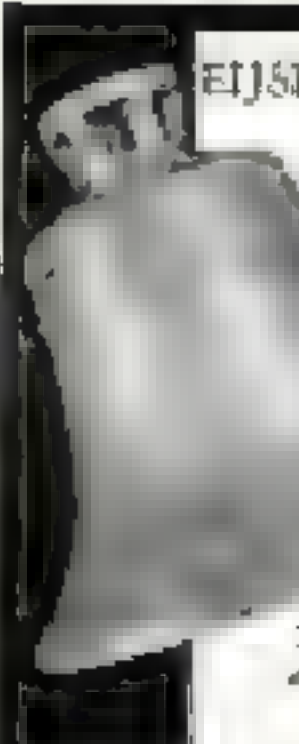
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How you can help conquer **CANCER**

Year after year, the outlook for controlling cancer grows brighter. Scientists are learning more about how and why cancer occurs, and are developing new methods of diagnosis and treatment. In addition, centers for the early detection of cancer are being increased, additional hospitals devoted exclusively to its treatment are opening, and greater numbers of doctors are being trained to combat cancer more effectively than ever before.

As a result, hope for greater gains runs high. Even now there is progress to justify this hope. For example, if diagnosed early and treated promptly and correctly, authorities say that 98 percent of cancers of the skin, 80 to 90 percent of cancers of the breast, and 85 percent of cancers of the rectum are curable.

Cancer of other parts of the body also is being treated with greater success. In fact, it is estimated that some 70,000 lives are now saved each year from cancer—lives that, not so long ago, might not have been spared.

According to the American Cancer Society, present cure rates could be doubled if those who develop cancer would seek medical help in time. This calls for greater public knowledge of cancer—particularly its possible "warning signs." While the symptoms of this disease are variable, no one should

delay seeing the doctor if any of the following signs occur:

1. Any sore that does not heal promptly.
2. A lump or thickening in the breast or elsewhere.
3. Unusual bleeding or discharge.
4. Any change in a wart or mole.
5. Persistent indigestion or difficulty in swallowing.
6. Persistent hoarseness or cough.
7. Any change in normal bowel habits.

(None is not usually an early symptom of cancer.)

These "warnings" are not sure signs of cancer. In fact, relatively few people who have such symptoms are found to have the disease. Yet they indicate that something is wrong, and that the doctor should be consulted. Should his examination reveal cancer, prompt treatment with X-ray, radiation, or surgery—used separately or together—will greatly increase the chances for cure.

Moreover, since cancer may start without any "warning signs" at all, periodic medical check-ups may help to safeguard against it. Such examinations are especially important for people aged 50 and over.

Today, by acting promptly when cancer is suspected, the disease may be controlled or cured in many cases.

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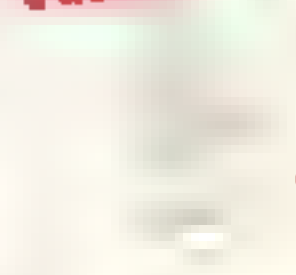
Please send me a copy of your booklet, #522, **What You Need to Know About Cancer**

Name

Street

City State

cancer



When he's in a hurry,
he runs on water

A power hawk or other energy bus might find a more profitable use for its money by investing in a new type of power plant, says a leading energy analyst.

There is a substantial body of research on the impact of the environment on the development of children's mental health problems. This research has shown that children who grow up in a family with a history of mental health problems are at a higher risk of developing mental health problems themselves. This is due to a number of factors, including the influence of the family environment, the role of the parent, and the child's own experiences. The research also shows that children who grow up in a family with a history of mental health problems are more likely to experience difficulties in school and in social relationships. This is due to the influence of the family environment, the role of the parent, and the child's own experiences. The research also shows that children who grow up in a family with a history of mental health problems are more likely to experience difficulties in school and in social relationships. This is due to the influence of the family environment, the role of the parent, and the child's own experiences.

They are not very large, from about half an inch to one inch in length, and are slender bodies. So long as they are in the water, they are of a white or more or less ashy grey color, but when they are out of the water they are black.

Not only is the growing number of students taking the SAT with minor disabilities a good reason to make accommodations available, but also the fact that the SAT is a high-stakes test. The SAT is a high-stakes test because it is used to determine which colleges a student is eligible to attend. The SAT is also a high-stakes test because it is used to determine which colleges a student is eligible to attend.

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NOTES

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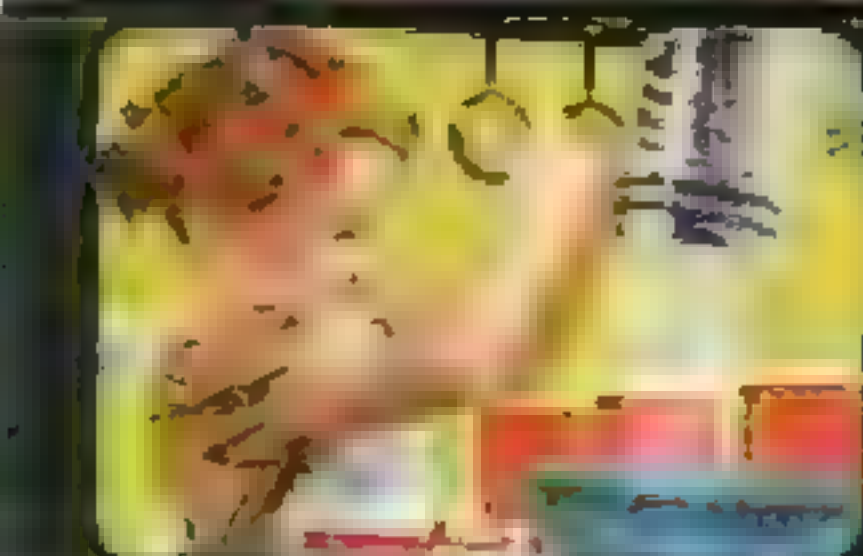
Happy childhood hours live on in

movies you
make yourself



There's a magic here, a magic you were
born with. It's the magic of childhood.
The magic of happy hours. The magic of
happy childhood hours.

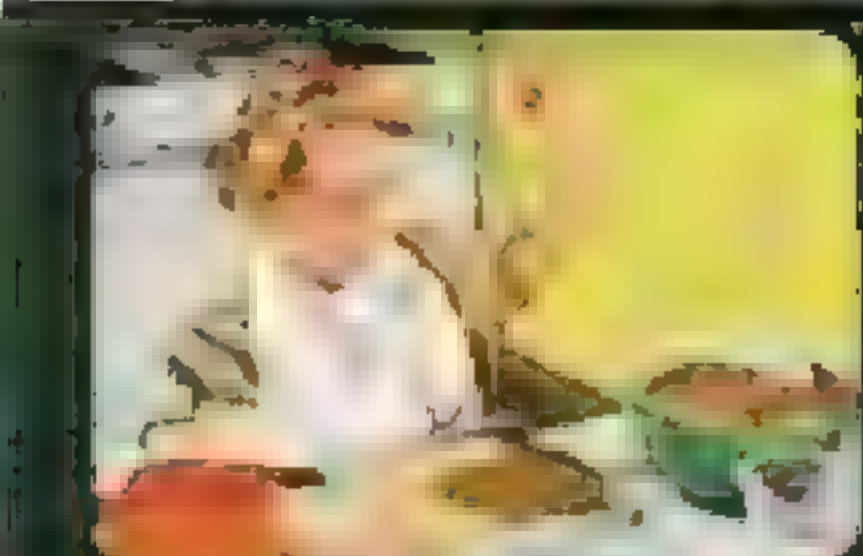
No "make-believe" here. Here's the
real thing. The magic of childhood.
The magic of happy hours. The magic of
happy childhood hours.



Baking is all whipping and
mixing. No need for
pistons. But it's the magic of
childhood. The magic of happy
hours. The magic of happy
childhood hours.

A little cook it horn before your
eyes. Moments like this are
your hours. Your hours. Your
hours. Your hours. Your hours.

There's magic here. A magic you
were born with. It's the magic of
childhood. The magic of happy
hours. The magic of happy
childhood hours.



A busy day in a little girl's life.
But it's the magic of childhood.
The magic of happy hours. The
magic of happy childhood hours.

She's pink and red and
happy. It's the magic of
childhood. The magic of happy
hours. The magic of happy
childhood hours.

Best birthday present of all. The
magic of childhood. The magic of
happy hours. The magic of happy
childhood hours.

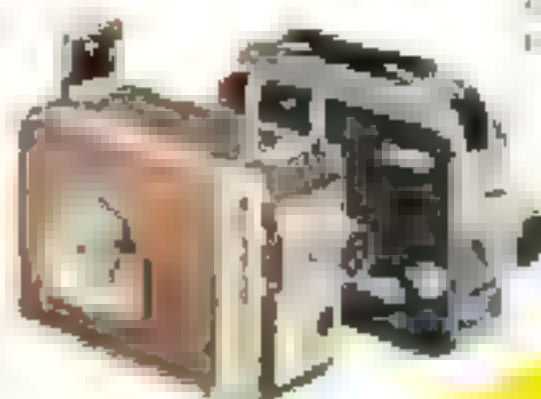
And this year there's a **Brownie Movie Camera** ^{at \$43³⁰}

It loads and shoots as easily as that "Tox"
Brownie you grew up with. It's the magic of
childhood. The magic of happy hours. The
magic of happy childhood hours.

Yes, it's so easy to make. To load. To get started.
That's the magic of the new Kodak way.
Eastman Kodak Company, Rochester 4, N. Y.

Brownie Movie Camera, Series of 16, with
film, \$43.30

Color Kodak Magazine 8 Camera, right over
left. 16mm. 35mm. 1/2 inch. 1/4 inch. 1/8 inch.
\$11.95. \$11.95. \$11.95. \$11.95. \$11.95.



Kodak

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You can use the `list` function to list the contents of a file. `list(M100)` will list the contents of the file `M100` in the current directory. The output will be a list of the files in the directory. For example, if you run `list(M100)` in the current directory, you will get the following output:

```
list(M100)
#> [1] "M100" "M100_1" "M100_2" "M100_3" "M100_4" "M100_5" "M100_6" "M100_7" "M100_8" "M100_9" "M100_10" "M100_11" "M100_12" "M100_13" "M100_14" "M100_15" "M100_16" "M100_17" "M100_18" "M100_19" "M100_20" "M100_21" "M100_22" "M100_23" "M100_24" "M100_25" "M100_26" "M100_27" "M100_28" "M100_29" "M100_30" "M100_31" "M100_32" "M100_33" "M100_34" "M100_35" "M100_36" "M100_37" "M100_38" "M100_39" "M100_40" "M100_41" "M100_42" "M100_43" "M100_44" "M100_45" "M100_46" "M100_47" "M100_48" "M100_49" "M100_50" "M100_51" "M100_52" "M100_53" "M100_54" "M100_55" "M100_56" "M100_57" "M100_58" "M100_59" "M100_60" "M100_61" "M100_62" "M100_63" "M100_64" "M100_65" "M100_66" "M100_67" "M100_68" "M100_69" "M100_70" "M100_71" "M100_72" "M100_73" "M100_74" "M100_75" "M100_76" "M100_77" "M100_78" "M100_79" "M100_80" "M100_81" "M100_82" "M100_83" "M100_84" "M100_85" "M100_86" "M100_87" "M100_88" "M100_89" "M100_90" "M100_91" "M100_92" "M100_93" "M100_94" "M100_95" "M100_96" "M100_97" "M100_98" "M100_99" "M100_100" "M100_101" "M100_102" "M100_103" "M100_104" "M100_105" "M100_106" "M100_107" "M100_108" "M100_109" "M100_110" "M100_111" "M100_112" "M100_113" "M100_114" "M100_115" "M100_116" "M100_117" "M100_118" "M100_119" "M100_120" "M100_121" "M100_122" "M100_123" "M100_124" "M100_125" "M100_126" "M100_127" "M100_128" "M100_129" "M100_130" "M100_131" "M100_132" "M100_133" "M100_134" "M100_135" "M100_136" "M100_137" "M100_138" "M100_139" "M100_140" "M100_141" "M100_142" "M100_143" "M100_144" "M100_145" "M100_146" "M100_147" "M100_148" "M100_149" "M100_150" "M100_151" "M100_152" "M100_153" "M100_154" "M100_155" "M100_156" "M100_157" "M100_158" "M100_159" "M100_160" "M100_161" "M100_162" "M100_163" "M100_164" "M100_165" "M100_166" "M100_167" "M100_168" "M100_169" "M100_170" "M100_171" "M100_172" "M100_173" "M100_174" "M100_175" "M100_176" "M100_177" "M100_178" "M100_179" "M100_180" "M100_181" "M100_182" "M100_183" "M100_184" "M100_185" "M100_186" "M100_187" "M100_188" "M100_189" "M100_190" "M100_191" "M100_192" "M100_193" "M100_194" "M100_195" "M100_196" "M100_197" "M100_198" "M100_199" "M100_200" "M100_201" "M100_202" "M100_203" "M100_204" "M100_205" "M100_206" "M100_207" "M100_208" "M100_209" "M100_210" "M100_211" "M100_212" "M100_213" "M100_214" "M100_215" "M100_216" "M100_217" "M100_218" "M100_219" "M100_220" "M100_221" "M100_222" "M100_223" "M100_224" "M100_225" "M100_226" "M100_227" "M100_228" "M100_229" "M100_230" "M100_231" "M100_232" "M100_233" "M100_234" "M100_235" "M100_236" "M100_237" "M100_238" "M100_239" "M100_240" "M100_241" "M100_242" "M100_243" "M100_244" "M100_245" "M100_246" "M100_247" "M100_248" "M100_249" "M100_250" "M100_251" "M100_252" "M100_253" "M100_254" "M100_255" "M100_256" "M100_257" "M100_258" "M100_259" "M100_260" "M100_261" "M100_262" "M100_263" "M100_264" "M100_265" "M100_266" "M100_267" "M100_268" "M100_269" "M100_270" "M100_271" "M100_272" "M100_273" "M100_274" "M100_275" "M100_276" "M100_277" "M100_278" "M100_279" "M100_280" "M100_281" "M100_282" "M100_283" "M100_284" "M100_285" "M100_286" "M100_287" "M100_288" "M100_289" "M100_290" "M100_291" "M100_292" "M100_293" "M100_294" "M100_295" "M100_296" "M100_297" "M100_298" "M100_299" "M100_300" "M100_301" "M100_302" "M100_303" "M100_304" "M100_305" "M100_306" "M100_307" "M100_308" "M100_309" "M100_310" "M100_311" "M100_312" "M100_313" "M100_314" "M100_315" "M100_316" "M100_317" "M100_318" "M100_319" "M100_320" "M100_321" "M100_322" "M100_323" "M100_324" "M100_325" "M100_326" "M100_327" "M100_328" "M100_329" "M100_330" "M100_331" "M100_332" "M100_333" "M100_334" "M100_335" "M100_336" "M100_337" "M100_338" "M100_339" "M100_340" "M100_341" "M100_342" "M100_343" "M100_344" "M100_345" "M100_346" "M100_347" "M100_348" "M100_349" "M100_350" "M100_351" "M100_352" "M100_353" "M100_354" "M100_355" "M100_356" "M100_357" "M100_358" "M100_359" "M100_360" "M100_361" "M100_362" "M100_363" "M100_364" "M100_365" "M100_366" "M100_367" "M100_368" "M100_369" "M100_370" "M100_371" "M100_372" "M100_373" "M100_374" "M100_375" "M100_376" "M100_377" "M100_378" "M100_379" "M100_380" "M100_381" "M100_382" "M100_383" "M100_384" "M100_385" "M100_386" "M100_387" "M100_388" "M100_389" "M100_390" "M100_391" "M100_392" "M100_393" "M100_394" "M100_395" "M100_396" "M100_397" "M100_398" "M100_399" "M100_400" "M100_401" "M100_402" "M100_403" "M100_404" "M100_405" "M100_406" "M100_407" "M100_408" "M10
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Wang, C. C. and J. H. M. van den Hul. 1979. The effect of the size of the sample on the estimation of the variance of the sample mean. *Statistica* 39:101-106.

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There is a difference now with respect to the
 concept of a "good" or "bad" person. It is not
 the same. It is the person who is the "good" or "bad" one
 all the time.

Wolfgang Iser: *Die Akt des Lesens*. Frankfurt: Suhrkamp, 1972. 128 S. 1980. 1,20 DM. ISBN 3 518 01511 1.

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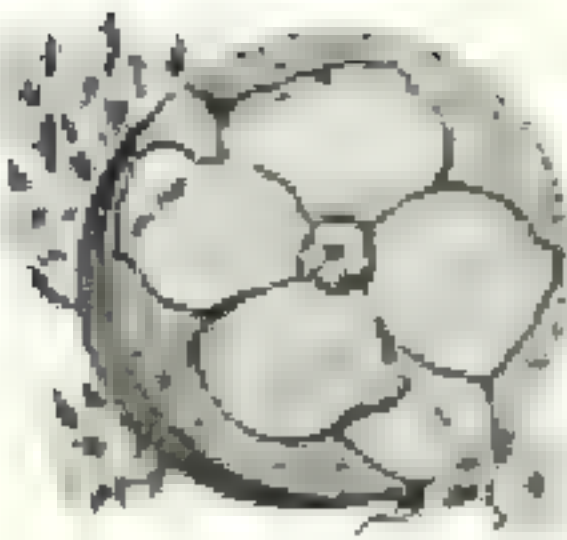
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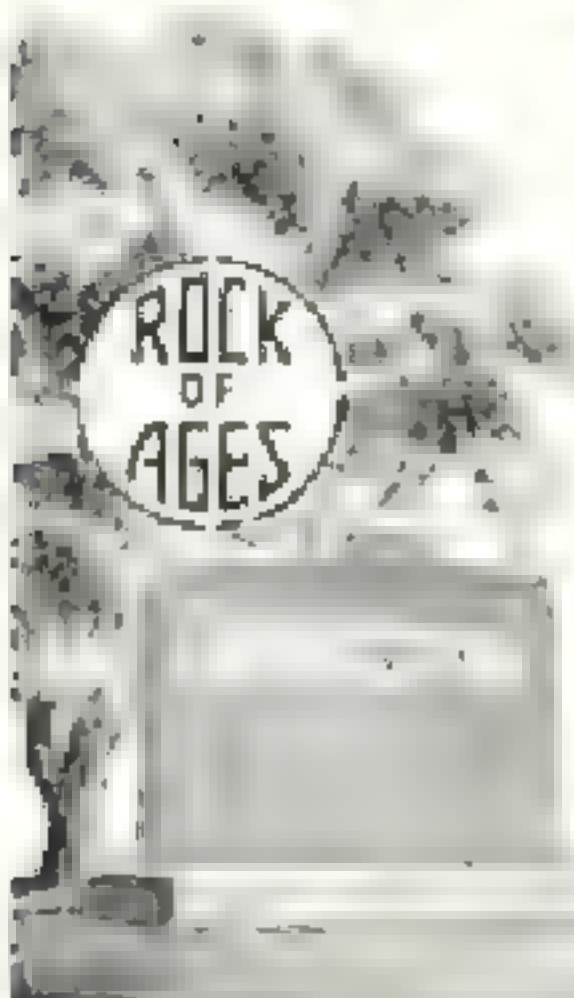
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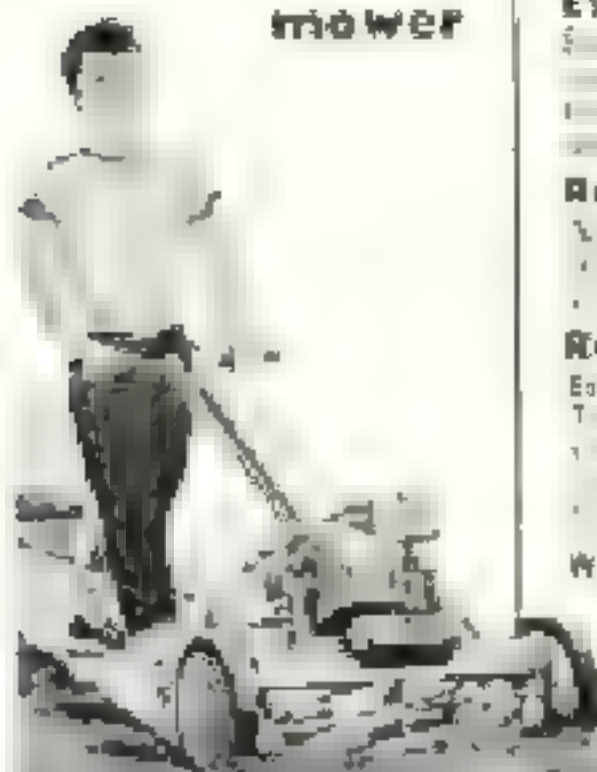
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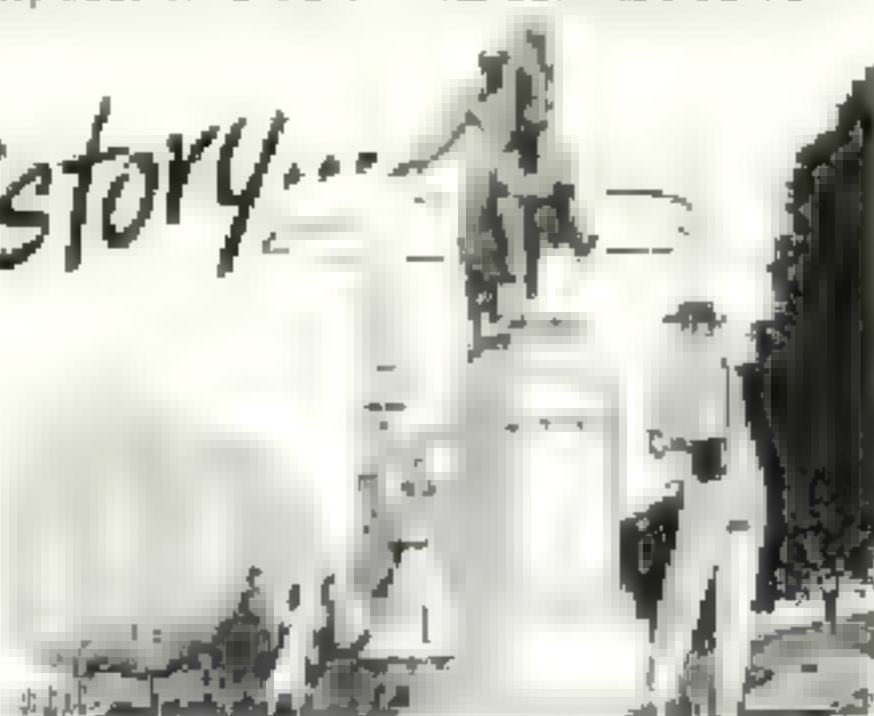
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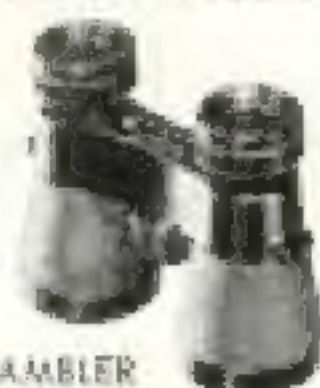


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The Call that Saved a Plane

A heavy snow was falling in the winter darkness when Mrs. Lucille Wilson, night operator at Alamosa, Colorado, heard the sound of a low-flying airplane. It was well past midnight and Mrs. Wilson knew that the last scheduled airliner had gone over many hours before.

Then she heard the sound of the low-flying plane again as it circled back over the town.

A light flashed on Mrs. Wilson's switchboard. Soon as she said "Number please" an anxious voice said—

"This is Ralph Zook, dispatcher down at the railroad depot. Did you hear a plane? Didn't sound right, somehow. It's flying pretty low."



The landing lights were turned on and the big C-46 came safely to earth.

"I heard it, too," said Mrs. Wilson. "And there's no plane scheduled this time of night."

"That plane could be in trouble," said Mr. Zook. "We ought to do something about it."

"I'll try to reach someone to turn on the lights at the airport," said Mrs. Wilson. "Listen! There it is again! It's lost!"

Quickly Mrs. Wilson went into action. She called the airport, the government weather station, and a private flying service. But no one answered.

Then she reached Stamy Edmisten, an airline employee, at his home. He rushed to the

airport and turned on the landing lights. A few minutes later a C-46 military transport loomed out of the snowstorm and came in for a safe landing. Thirteen men stepped from the plane, none the worse for the experience.

What could have been tragedy was prevented by quick-acting Ralph Zook and Stamy Edmisten and the alert, cool-thinking operator, Mrs. Lucille Wilson—one of about 650,000 telephone men and women guarding and serving America, twenty-four hours a day, in every kind of weather.



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